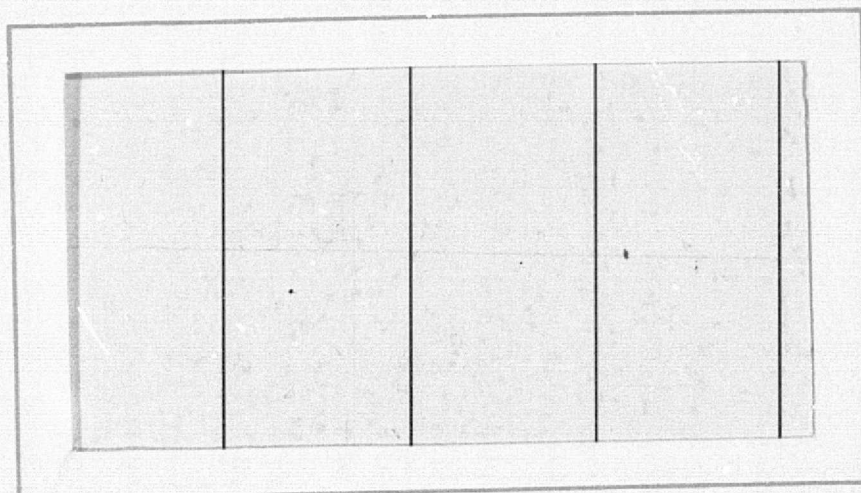


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Vol.
II



(NASA-CR-143968) TRACK/TRAIN DYNAMICS TEST
REPORT TRANSFER FUNCTION TEST. VOLUME 2:
DATA BOOK, y-AXIS TESTS, ACTUATORS 180 DEG
OUT OF PHASE. RUNS: 6, 9, 13, 14 AND 23
(Martin Marietta Corp.) 269 p HC \$8.50

N75-33402

Unclas
G3/37 42661

MARTIN MARIETTA

POST OFFICE BOX 179, DENVER, COLORADO 80201



TR-005-TF

30 May 1975

TRACK/TRAIN DYNAMICS

TEST REPORT

TRANSFER FUNCTION TEST

Volume II

Data Book

Y-Axis Tests

Actuators 180° Out of Phase

Runs: 6, 9, 13, 14 & 23

TABLE I. DATA INDEX - VOLUME II

MEAS. NO.	XDCR SENSI- TIVITY	RUN NUMBER VS PAGE NUMBER									
		RUN 6	RUN 9	RUN 13	RUN 14	RUN 23					
FL1/OSC	15K#/V 7.651V	PP. 7	PP. 55	PP. 105 106	PP. 158 159	PP. 215 216	217 218				
FL2	↓	8	56	107	160	219					
FL2/FL1	15K#/V 15K#/V	9	57	108	161	220					
FV2	20K#/V 15K#/V	10	58 59	109	162	221					
FV3	↓	11	60	110	163 164	222 223					
DV1	0.5"/V 15K#/V	12	61	111	165 166	224					
DV2	↓	13	62	112	167 168	225					
DV3	↓	14	63	113	169	226 227					
DV4	↓	15	64	114	170	228					
AV1	1 Gp/V 15K#/V	16	65	115	171	229					
AV2	↓	17	66	116	172	230 231					
AV3	↓	18	67	117	173 174	232					
AV4	↓	19	68	118	175 176	233					
AV5	↓	20	69	119 120	177 178	234					
AV6	↓	21	70	121	179	235					
AL1	↓	22	71	122	180	236					
AL2	↓	23	72	123	181	237					
AL3	↓	24	73	124	182	238					
AL6	↓	25	74 75	125	183 184	239					
AL7	↓	26	76	126	185	240					
AL11	↓	27	77	127	186	241					
Δ P	3.5Kpsi/V 15K#/V	--	--	128	187	242					
AL4	1Gp/V 15K#/V	28	78	129	188	243					
AL5	↓	29	79 80	130	189	244 245					
AL8	↓	30	81	131	190	246					
AL9	↓	31 32	82	132	191 192	247					
AL10	↓	33	83	133 134	193	248 249					
AL12	↓	34	84	135 136	194	250					
DL1	0.5"/V 15K#/V	35	85	137 138	195	251					
DL2	↓	36	86	139	196	252					
DL3	↓	37	87	140	197	253					
DL4	↓	38	88	141	198	254					
DL5	↓	39	89	142	199	255					
DL6	↓	40	90	143	200	256					
DL7	↓	41	91	144	201	257					
DL8	↓	42	92	145	202	258					
DL9	↓	43	93	146	203	259					

[illegible]

VOLUME IIRUN 6 TEST DATA

Y-AXIS, 5000 POUND/ACTUATOR TEST LEVEL,
ACTUATORS 180° OUT OF PHASE

1 HEADING: TRAIN TRACK TRANSFER 5000 LB TEST 3/18/75

SWEEP PARAMETERS:

2 MODE 1=LOG, 0=LIN: 1.
 3 TYPE 1=UNI-DIRECTIONAL, 0=BI-DIRECTIONAL: 1.
 4 START, END FREQ, HZ: .5 50.
 FREQ RANGE -- OCTAVES, DECADES: 6.644 2.
 5 SPECIFICATION 1=RATE, 0=DURATION: 1.
 6 UNITS 1=OCT/MIN, 0=DEC/MIN: 1.
 7 RATE, OCT/MIN: 2.
 SWEEP DURATION -- MIN, SEC: 3. 19.

TEST LENGTH:

8 SPECIFICATION 1=TIME, 0=SWEEP CYCLES: 0.
 9 CYCLES: 1.
 TEST TIME -- HRS, MIN, SEC: 0. 3. 19.

START-UP AND SHUT-DOWN:

10 START-UP TIME, SEC: 120.
 11 SHUT-DOWN TIME, SEC: .5

VIBRATION LIMITS (P-P):

12 DISPLACEMENT, IN: 5000.
 13 VELOCITY, IN/SEC: 9999.
 14 ACCELERATION, G: 450.

REFERENCE CONTROL SPECTRUM:

15 TYPE, VALUE, FREQ, ABORT LIMIT: 2. 60. 1.98 3.
 16 TYPE, VALUE, FREQ, ABORT LIMIT: 2. 60. 50. 3.
 17 TEST LEVEL (DB BELOW REF): 6.

ACCELERATION SIGNALS:

18 NR OF SIGNALS: 2.
 CHANNEL NRS: 1. 2.
 19 1=PEAK, 0=RMS: 0.
 20 SENSITIVITY, MV/G: 22.22
 21 STRATEGY 1=MAX, 0=AVG: 1.

LIMIT SIGNALS:

22 NR OF SIGNALS: 0.

ABORT LINES:

23 NR OF LINES: 0.

ALARM LINES:

24 NR OF LINES: 0.
 25 1=DUAL-CHANNEL A/D, 0=ACE: 1.
 26 COMPRESSION SPEED 2=HIGH, 1=NORMAL, 0=LOW: 1.

POST-TEST DOCUMENTATION

TRAIN TRACK TRANSFER 5000 LB TEST 3/18/75

COMPLETION STATUS: ABORTED DURING SWEEP 1 AT 26.15 HZ.
CONTROL LIMITS EXCEEDED.

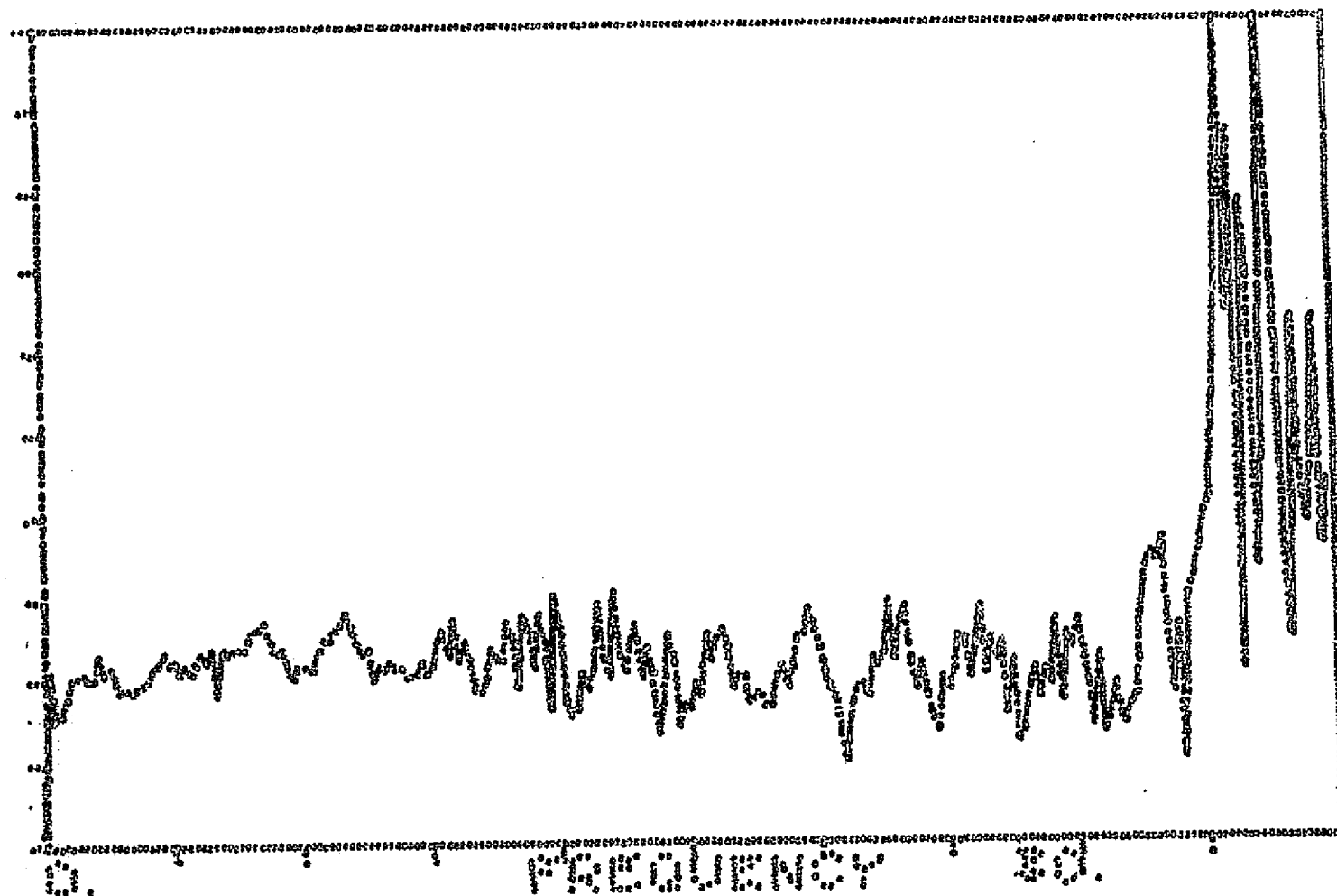
TEST DURATION -- HRS, MIN, SEC: 0 2 51

MAX ABS CONTROL ERROR: 3.259 DB AT 26.12 HZ.
AVG ABS CONTROL ERROR: .1015 DB.CONTROL
CHANNEL FREQ RANGE (HZ)

SWEEP 1

2	.5	--	3.523
1	3.523	--	5.243
2	5.243	--	6.051
1	6.051	--	8.045
2	8.045	--	9.578
1	9.578	--	11.56
2	11.56	--	12.24
1	12.24	--	13.05
2	13.05	--	26.15

11:00



COMPLEX

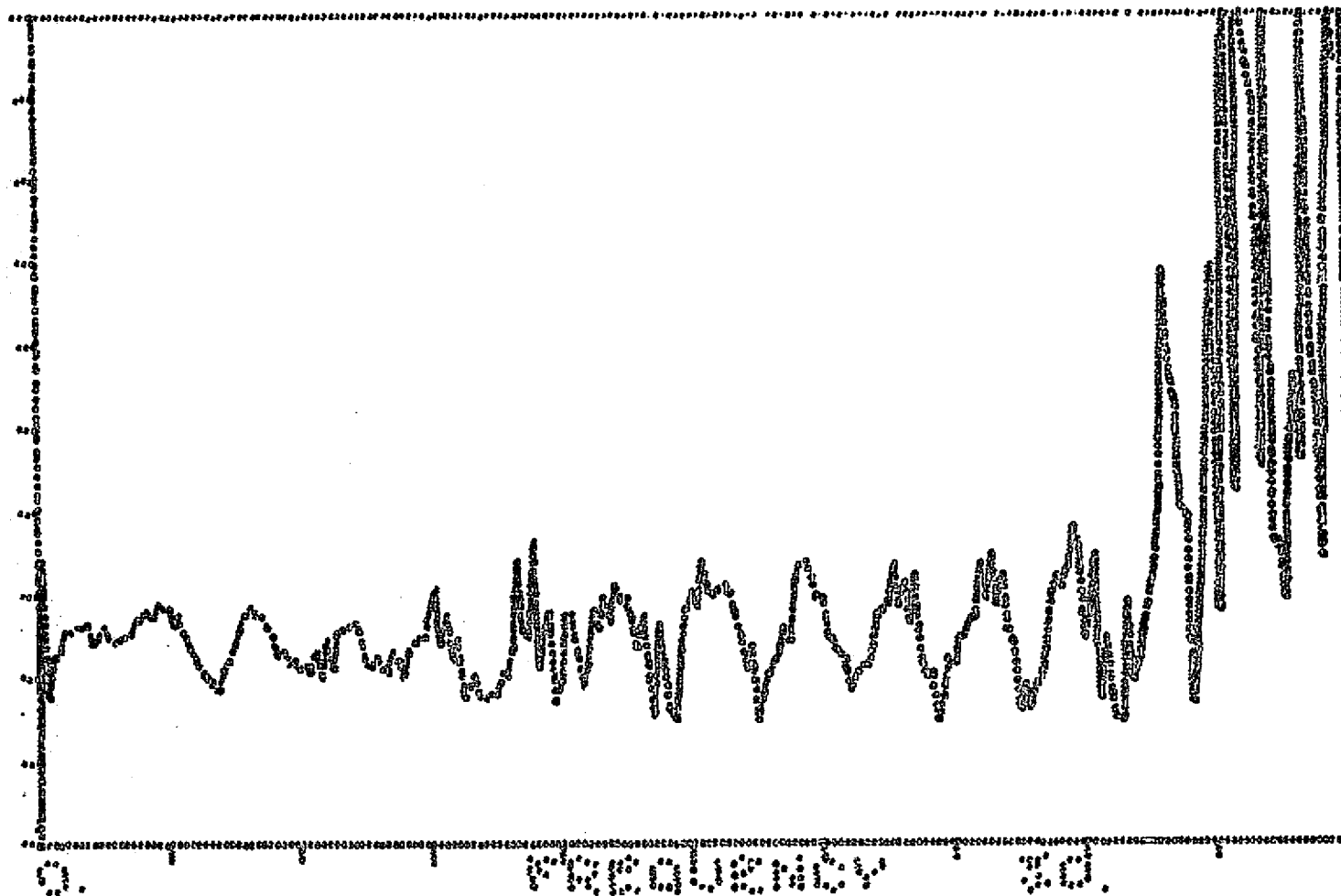
0000 0000

FL1/DRIVE

2.

1980H

0.



COMPLEX

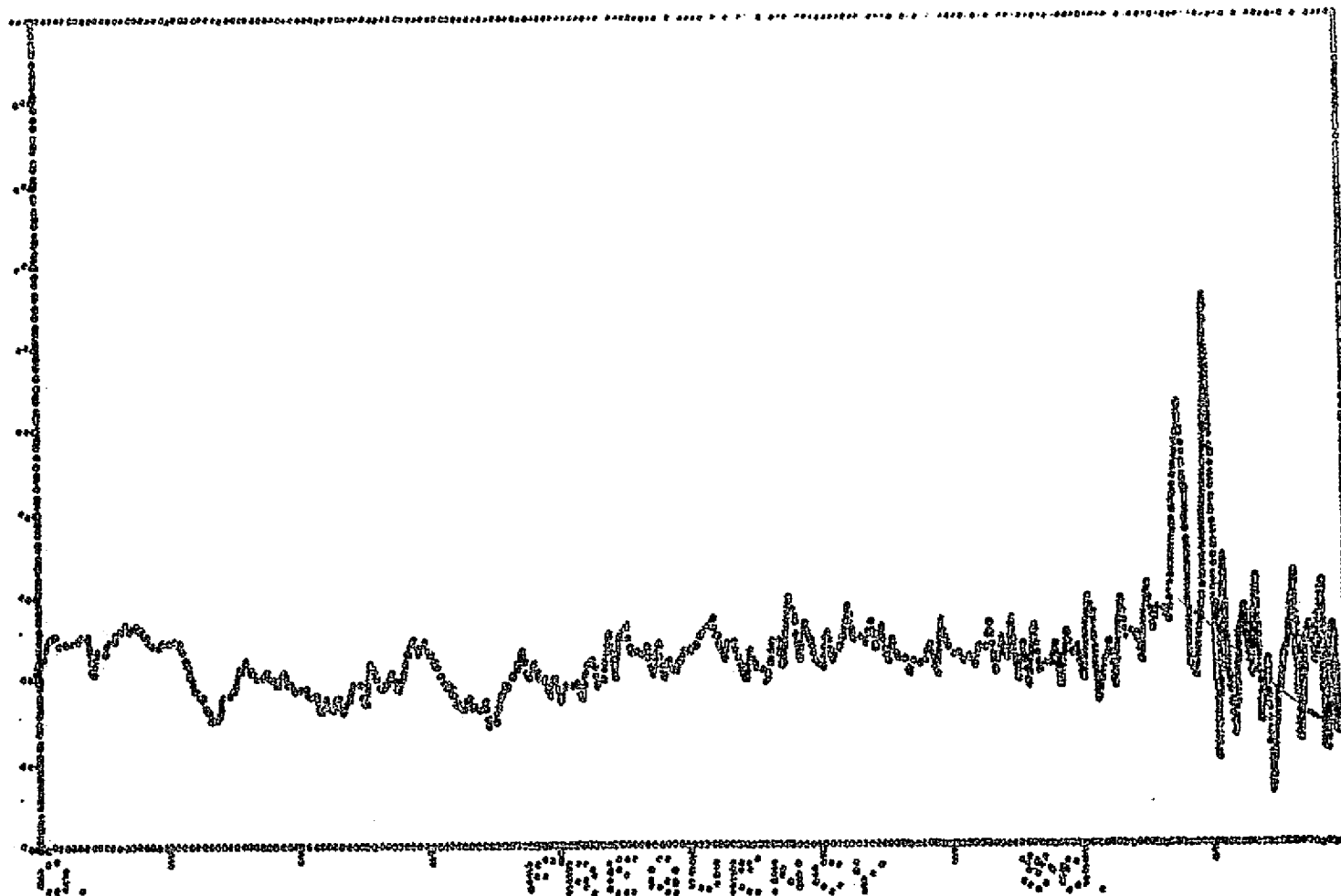
SIZE: 256

FL2/DRIVE

800
800
800

800
800
800

800
800
800



COMPLEX

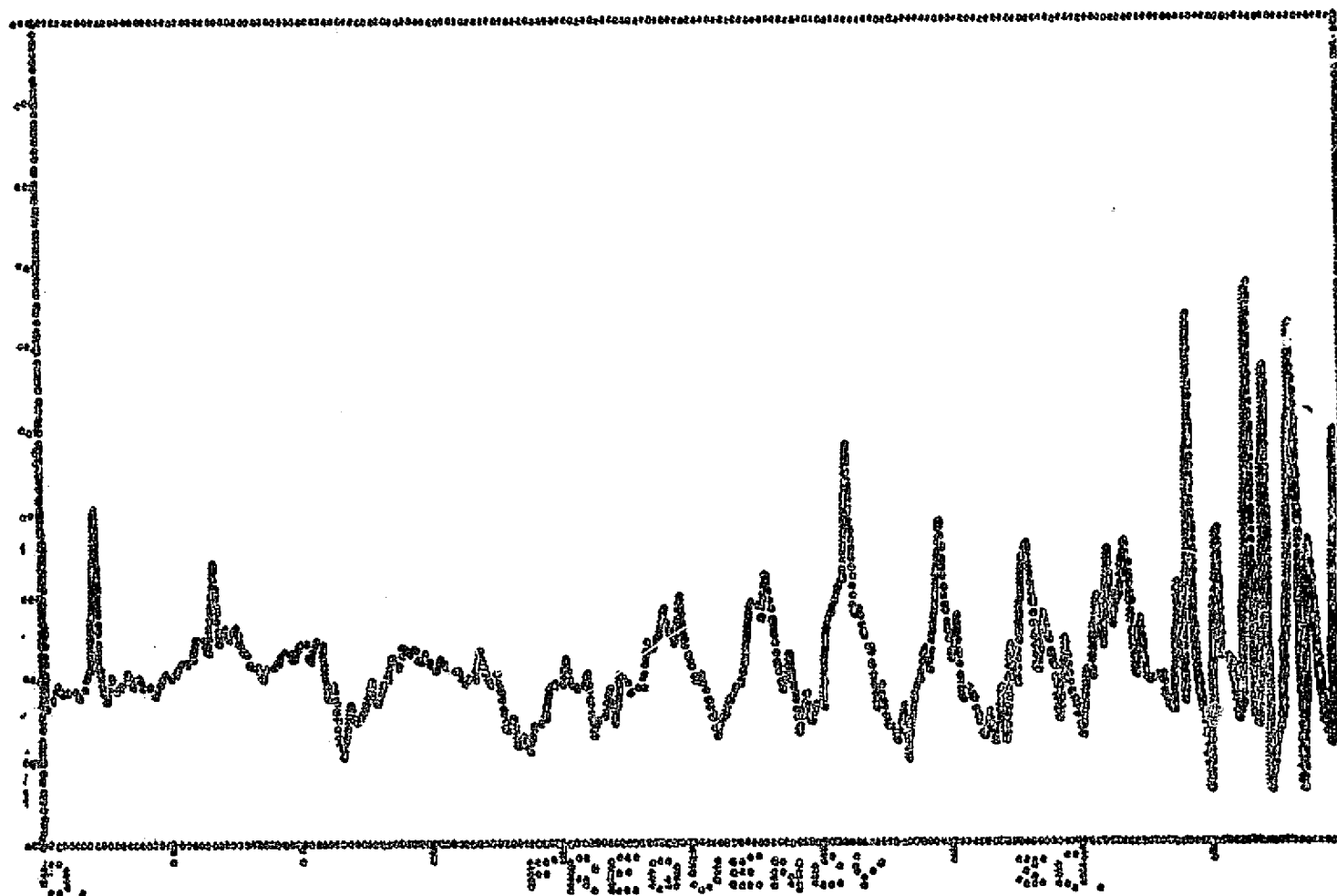
0122 356

FL2/FL1

2.

1000

0.



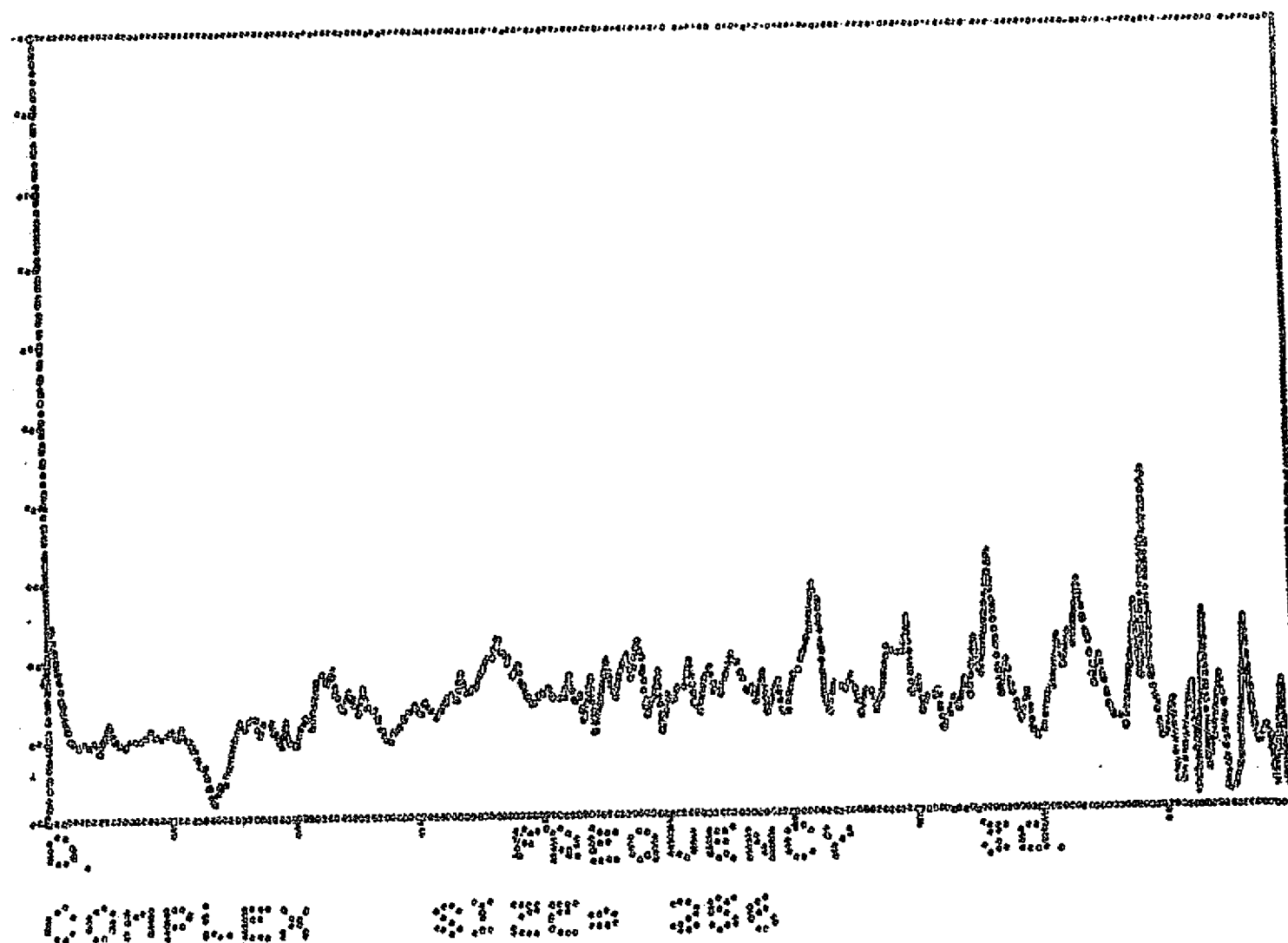
0.000000

0.000000

FV2/FL1

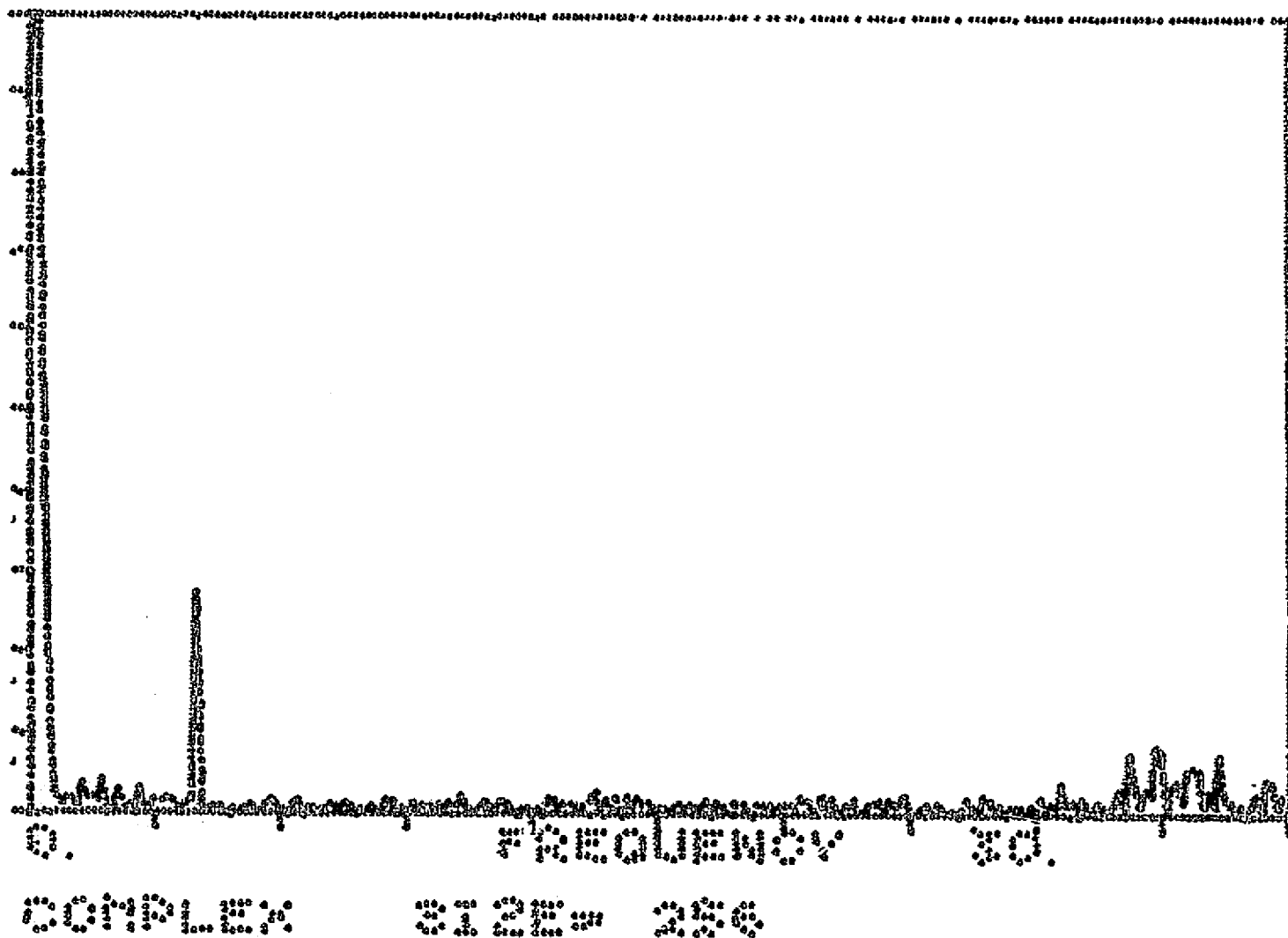
5.

mean



6.

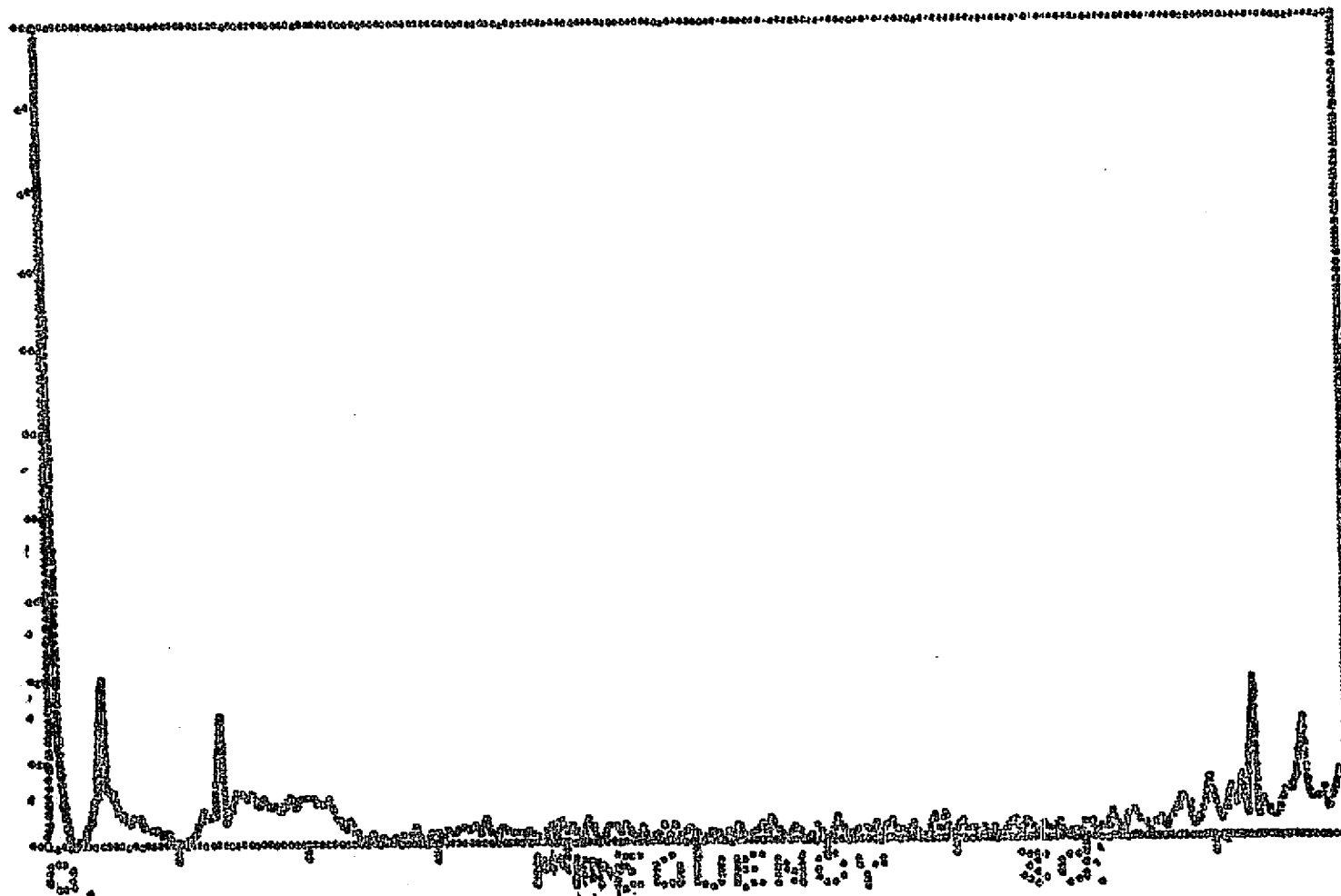
FV3/FL1



1.

11:00:00

0.



00:00:00

00:00:00

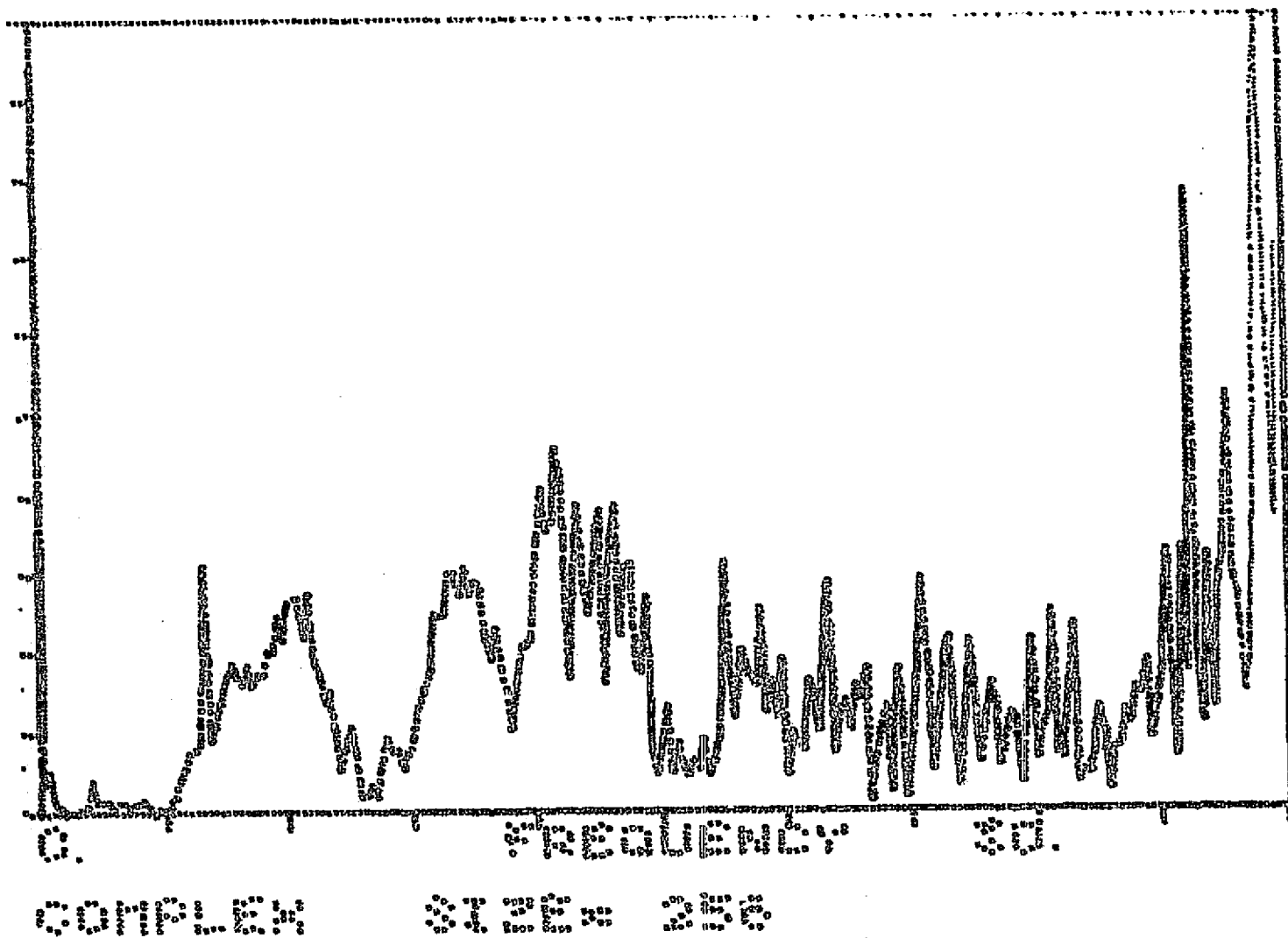
DV3/FL1

0603

[illegible]

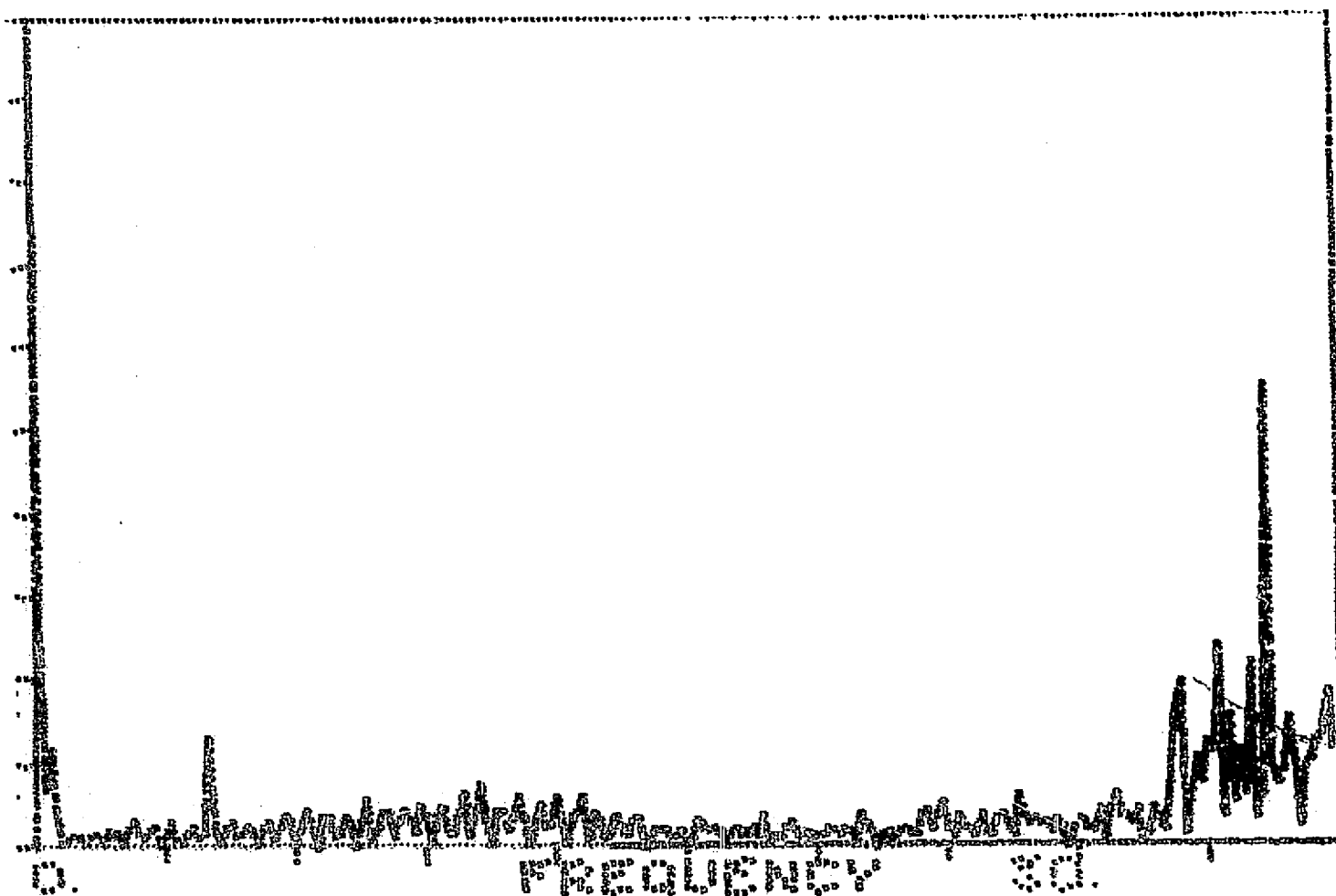
30

15



AVI/FL1

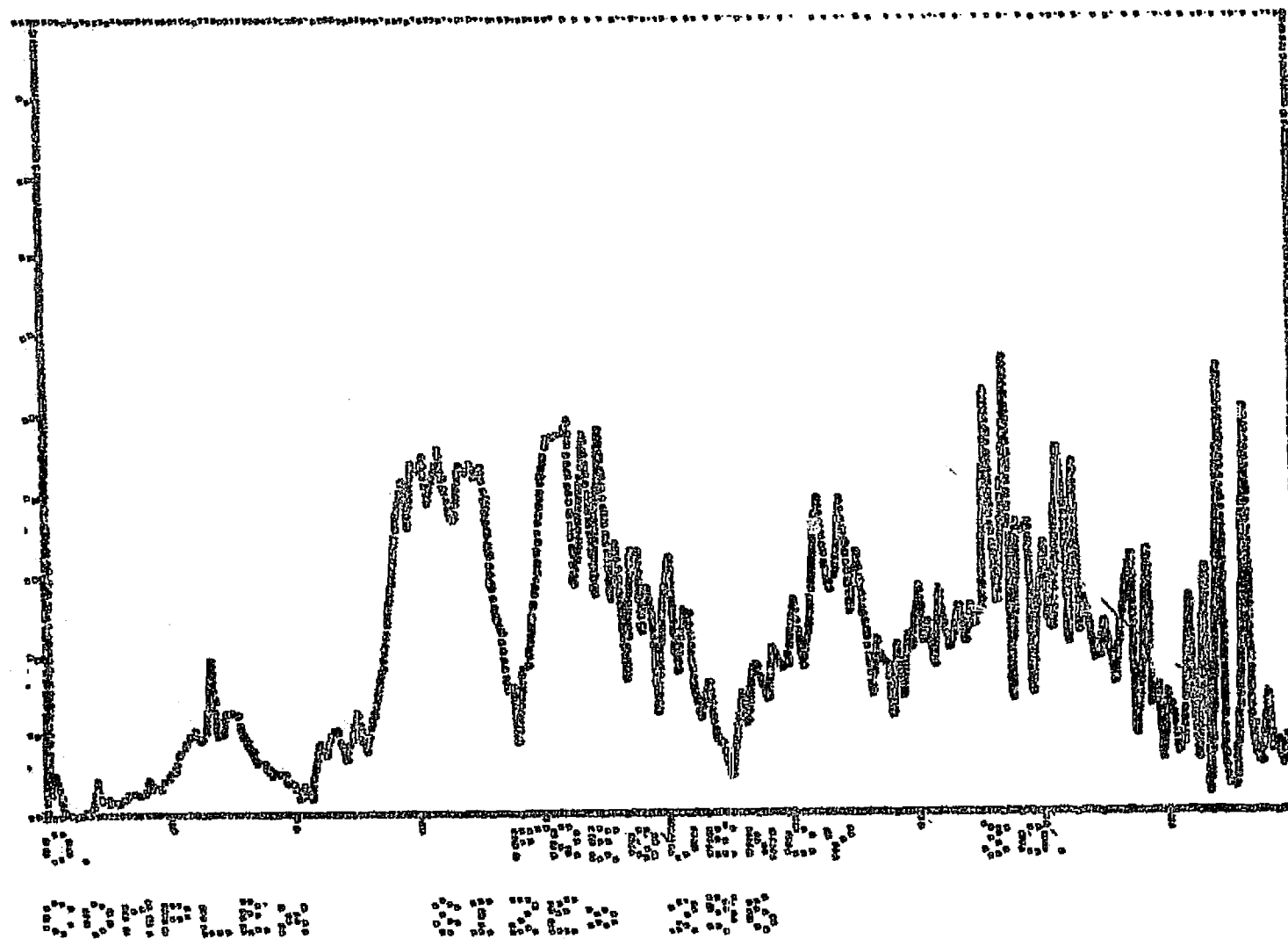
1000



0.000000

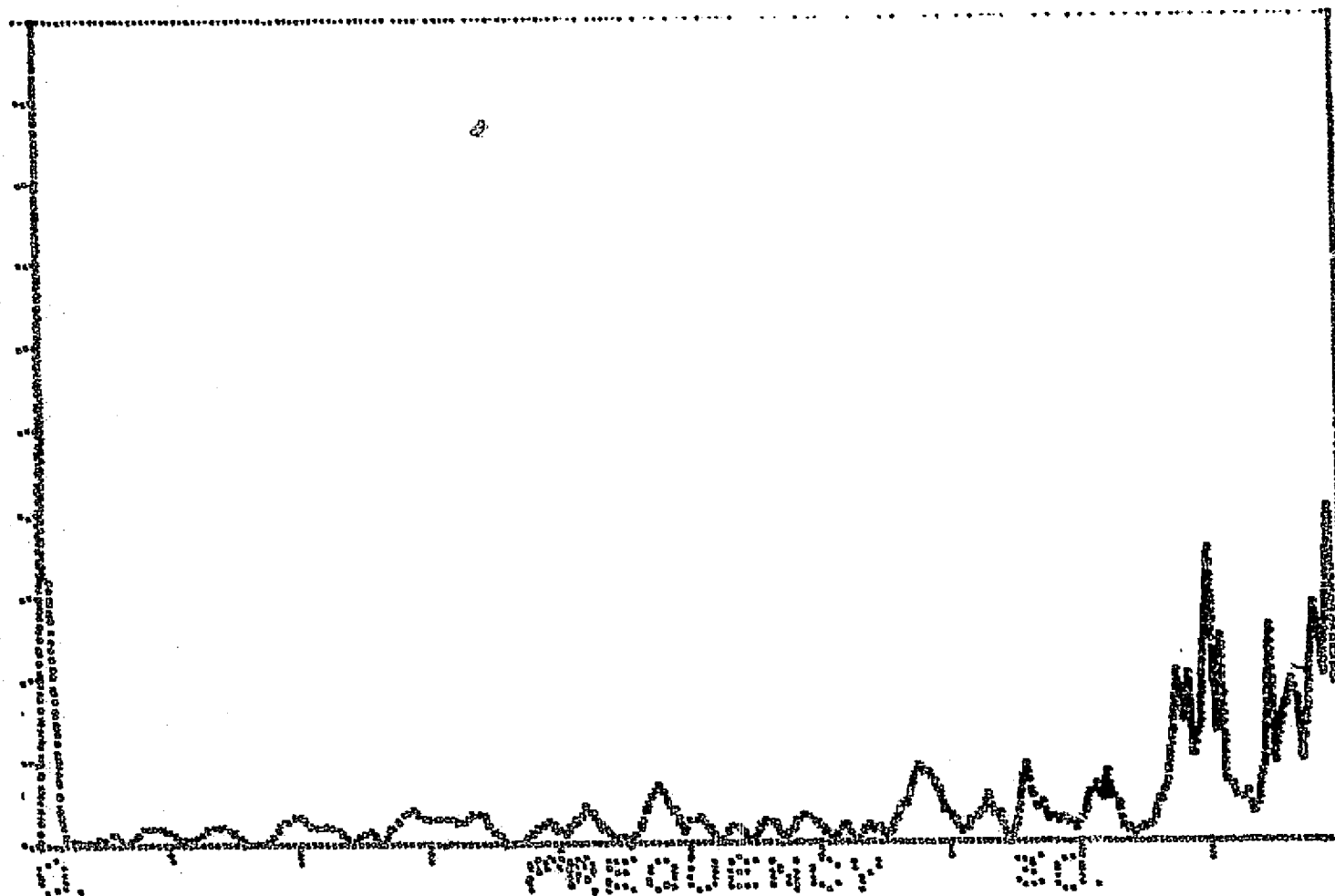
0.000000

AV2/FL1



05

1954



COMPLEX

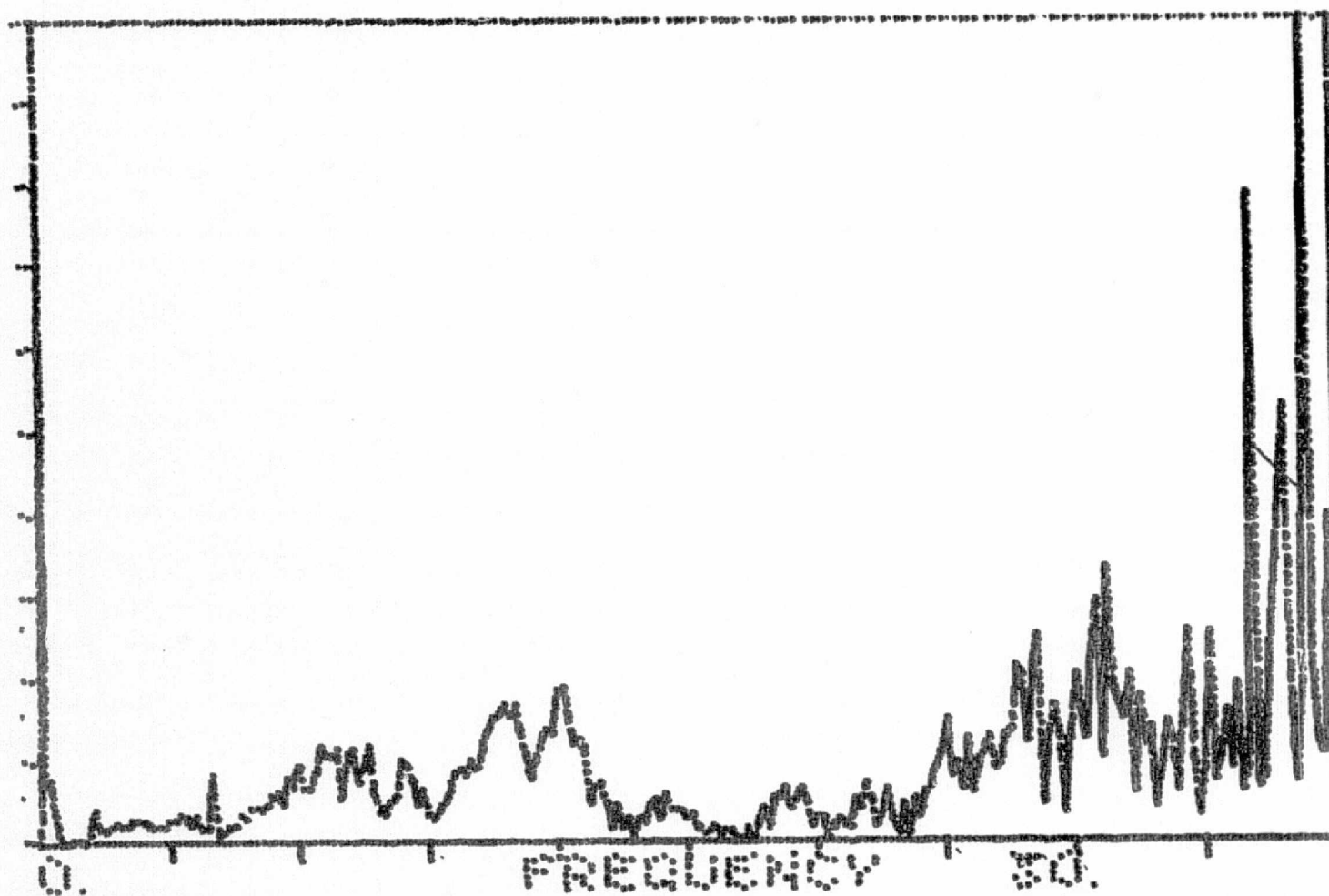
SIZE = 255

AV4/FL1

3.

11604

0.



COMPLEX

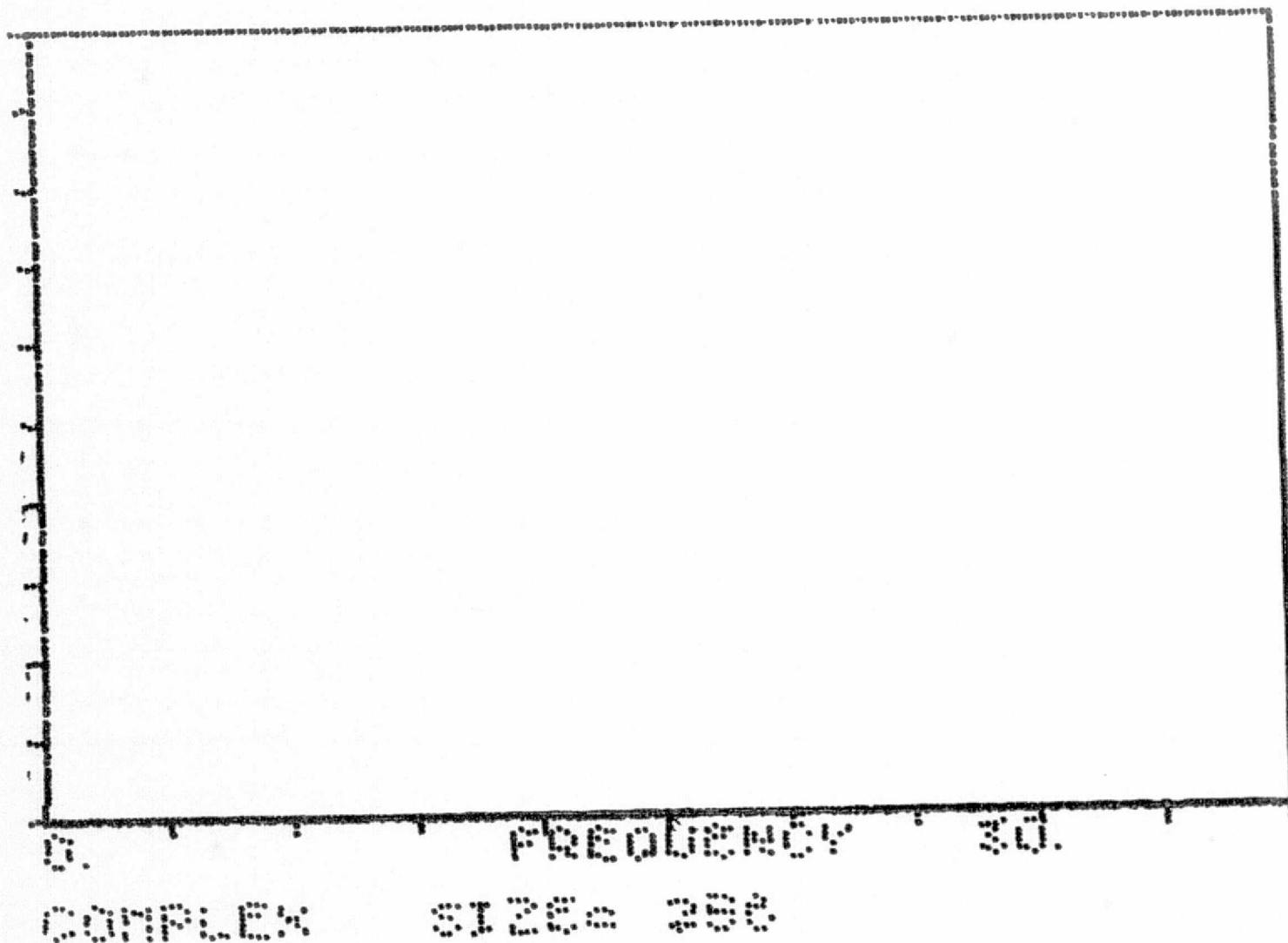
SIZE= 256

AV5/FL1

. 0000

MAGN

0.

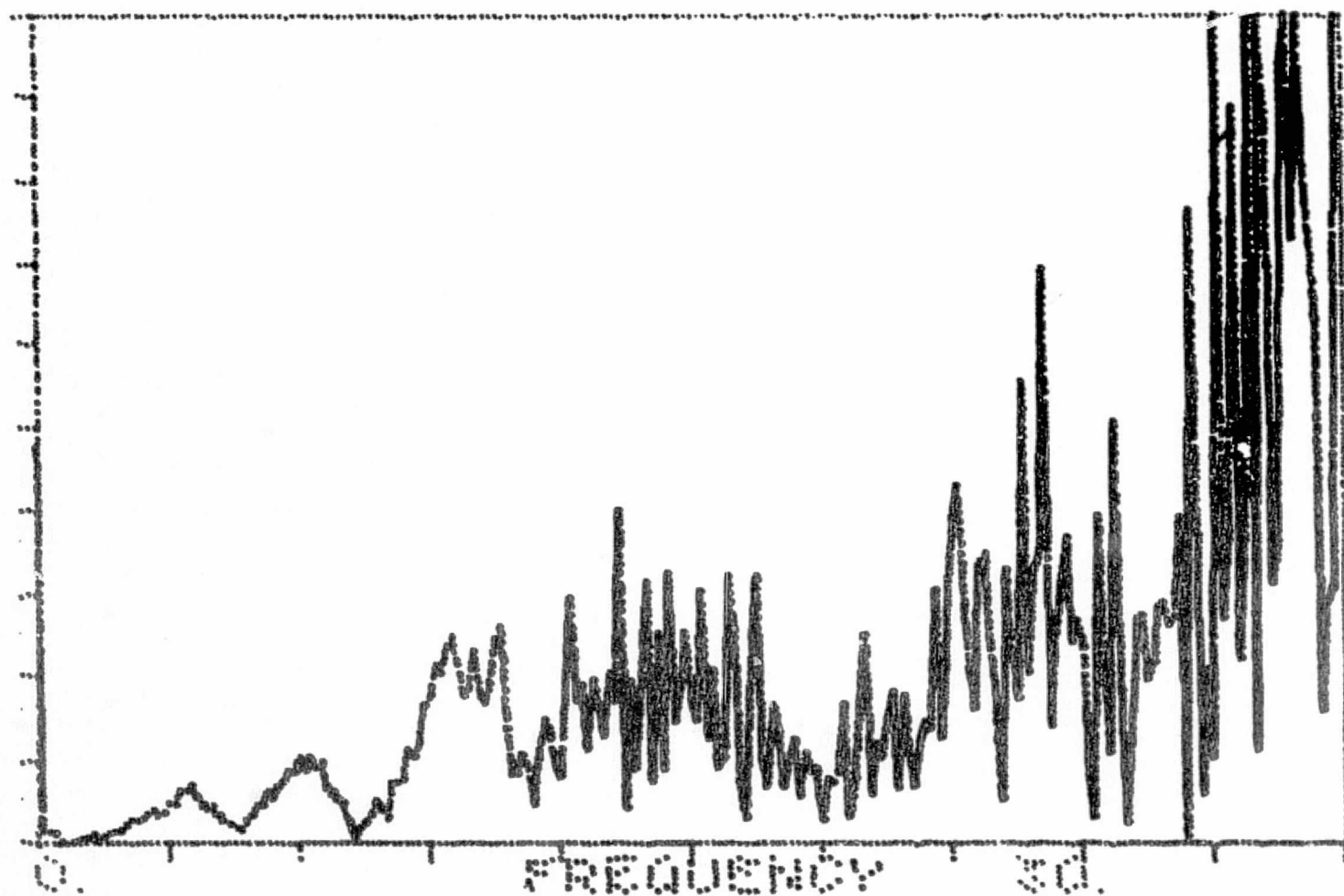


AV6/FL1

2.

MAGN

a.



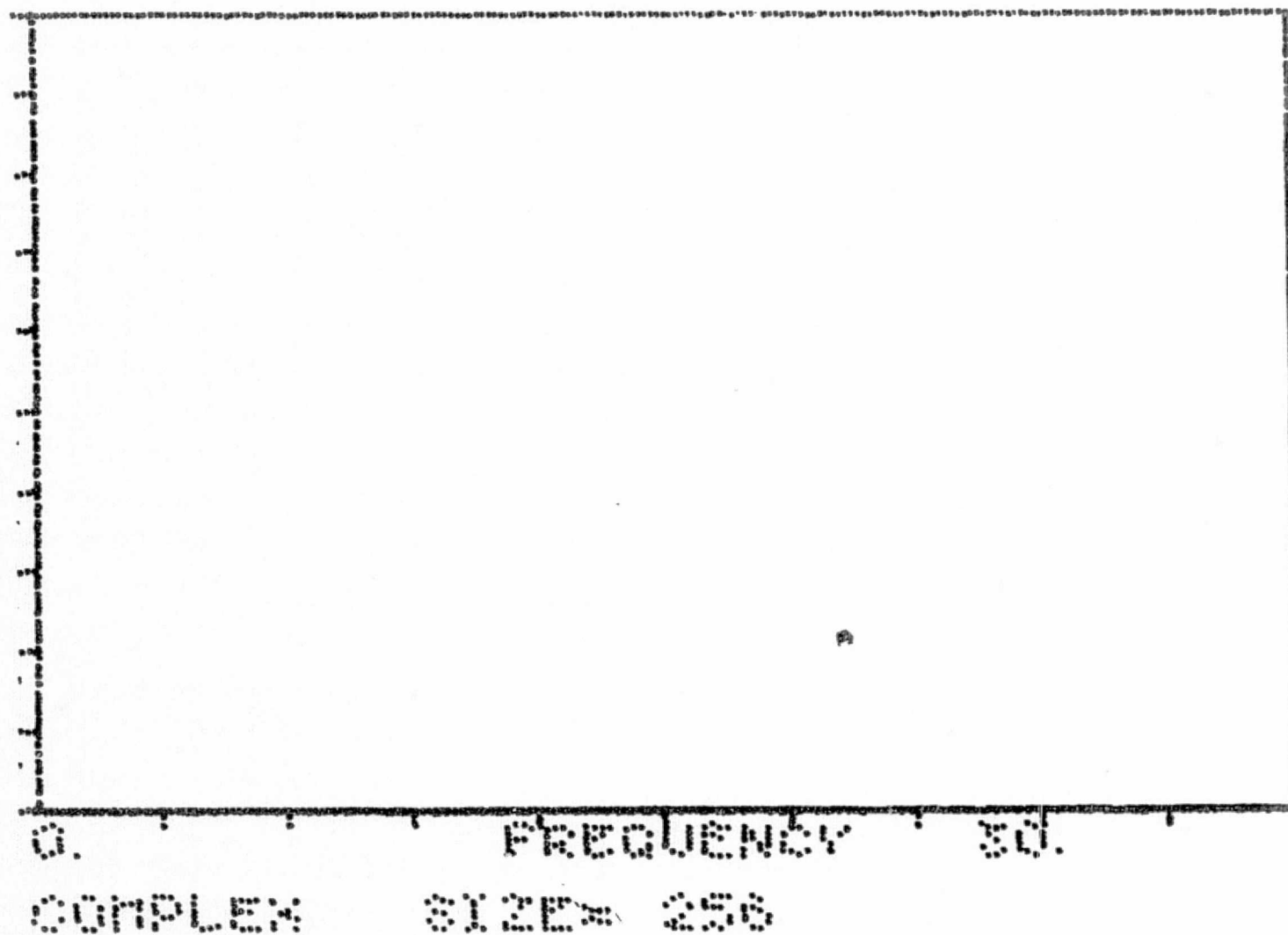
COMPLEX

SIZE= 288

AL1/FL1

max

0.

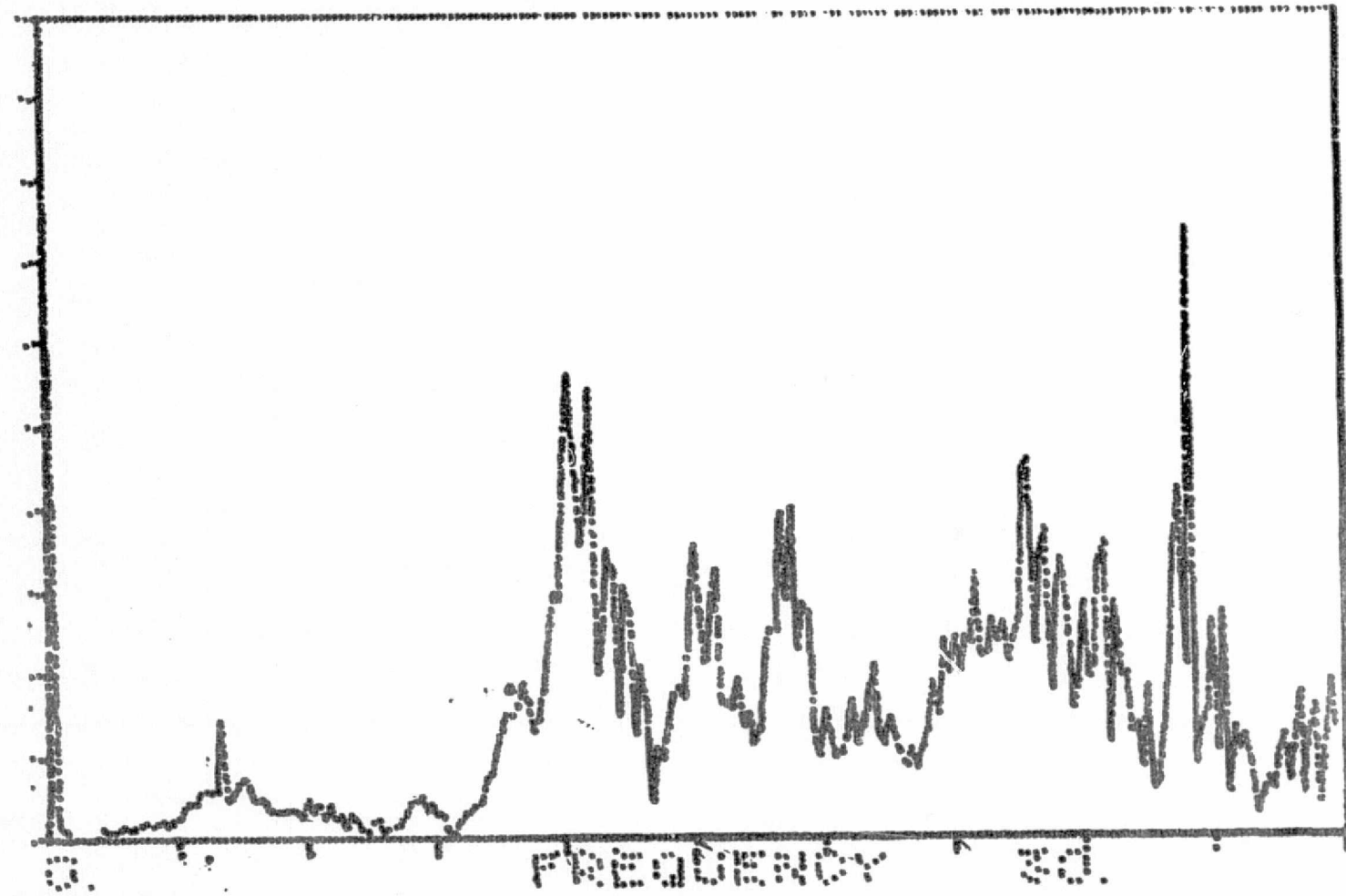


AL2/FL1

3.

11904

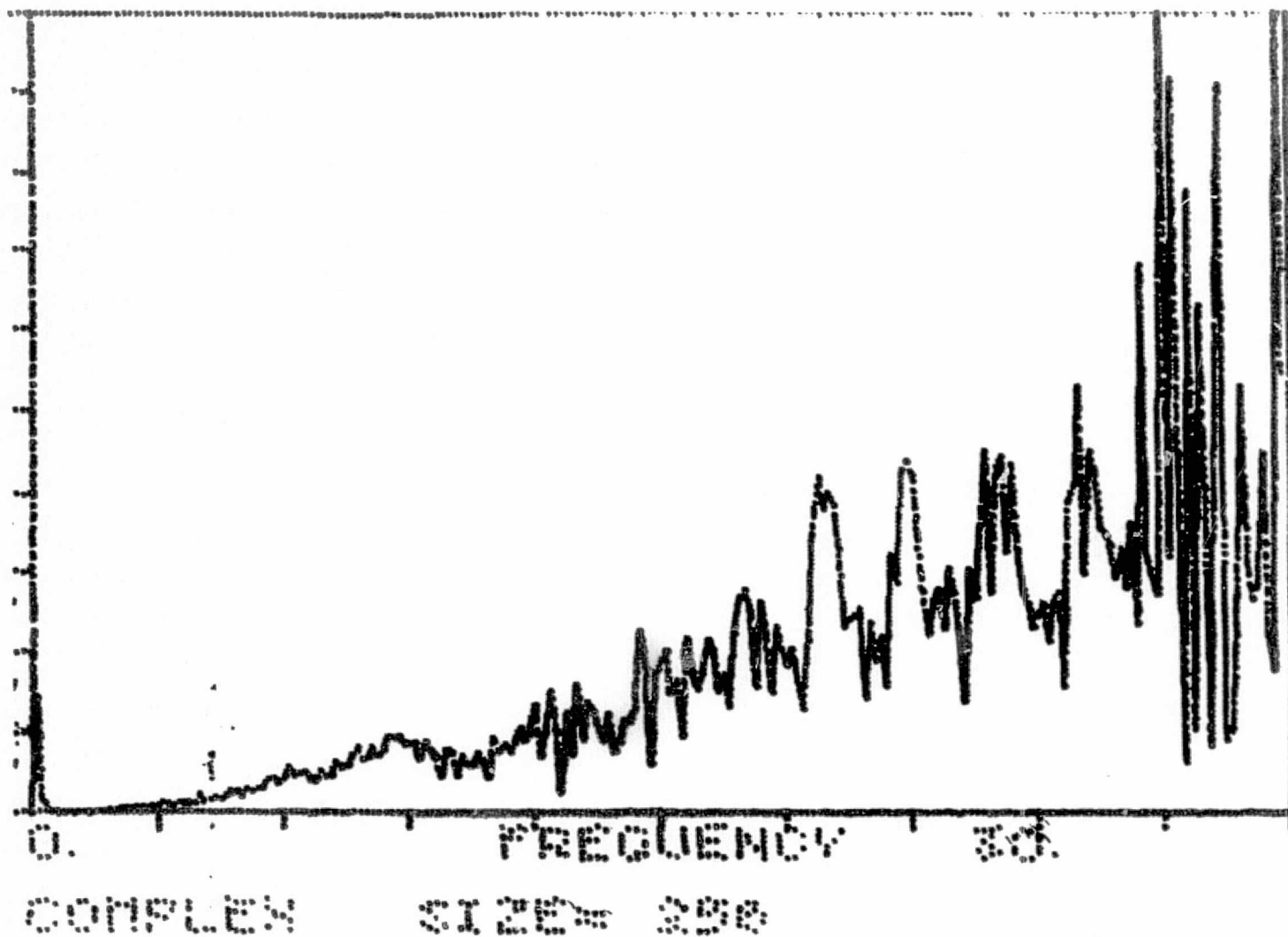
0.



COMPLEX

SIZE= 250

AL3/FL1

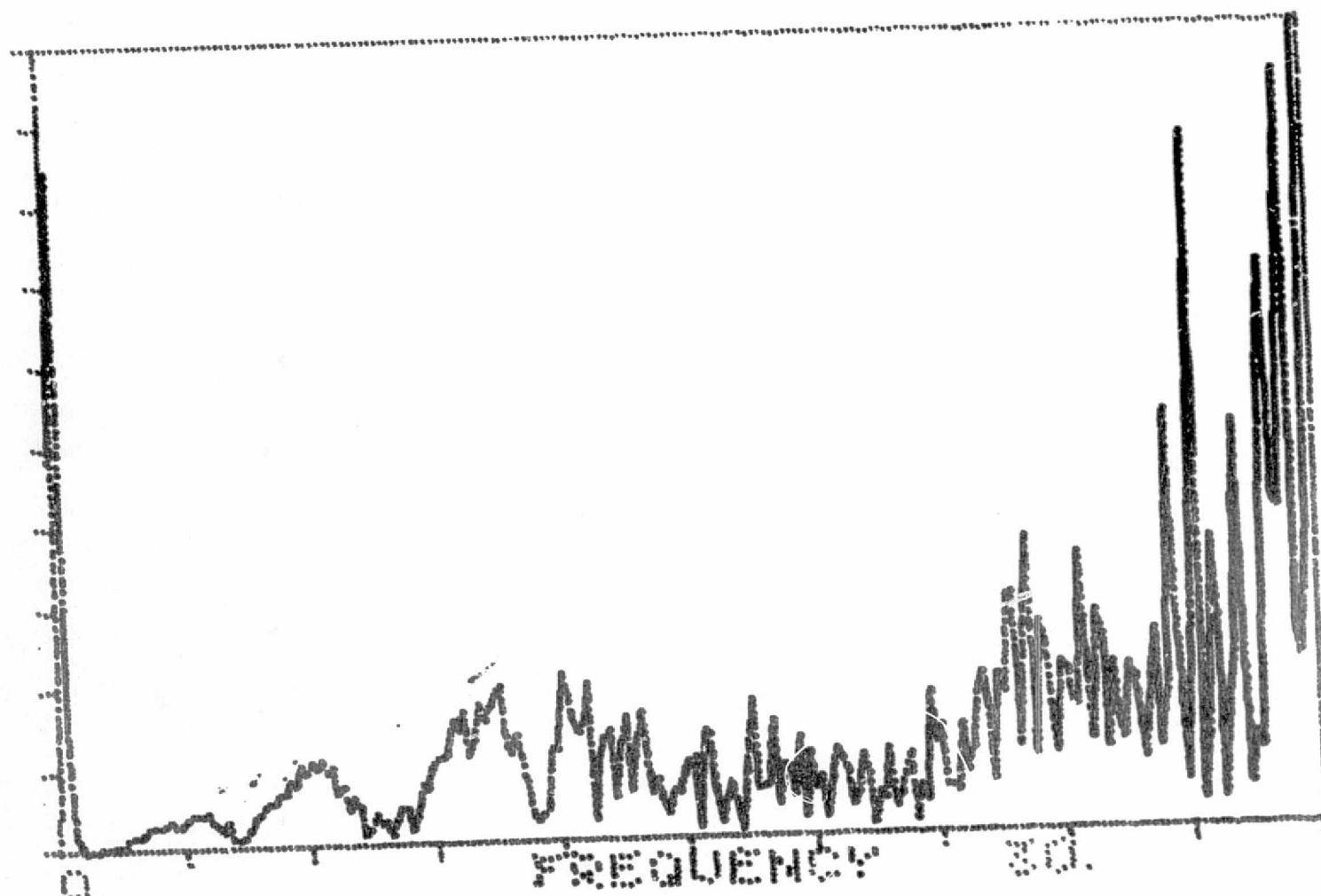


AL6/FL1

2.

HAON

0.



COMPLEX

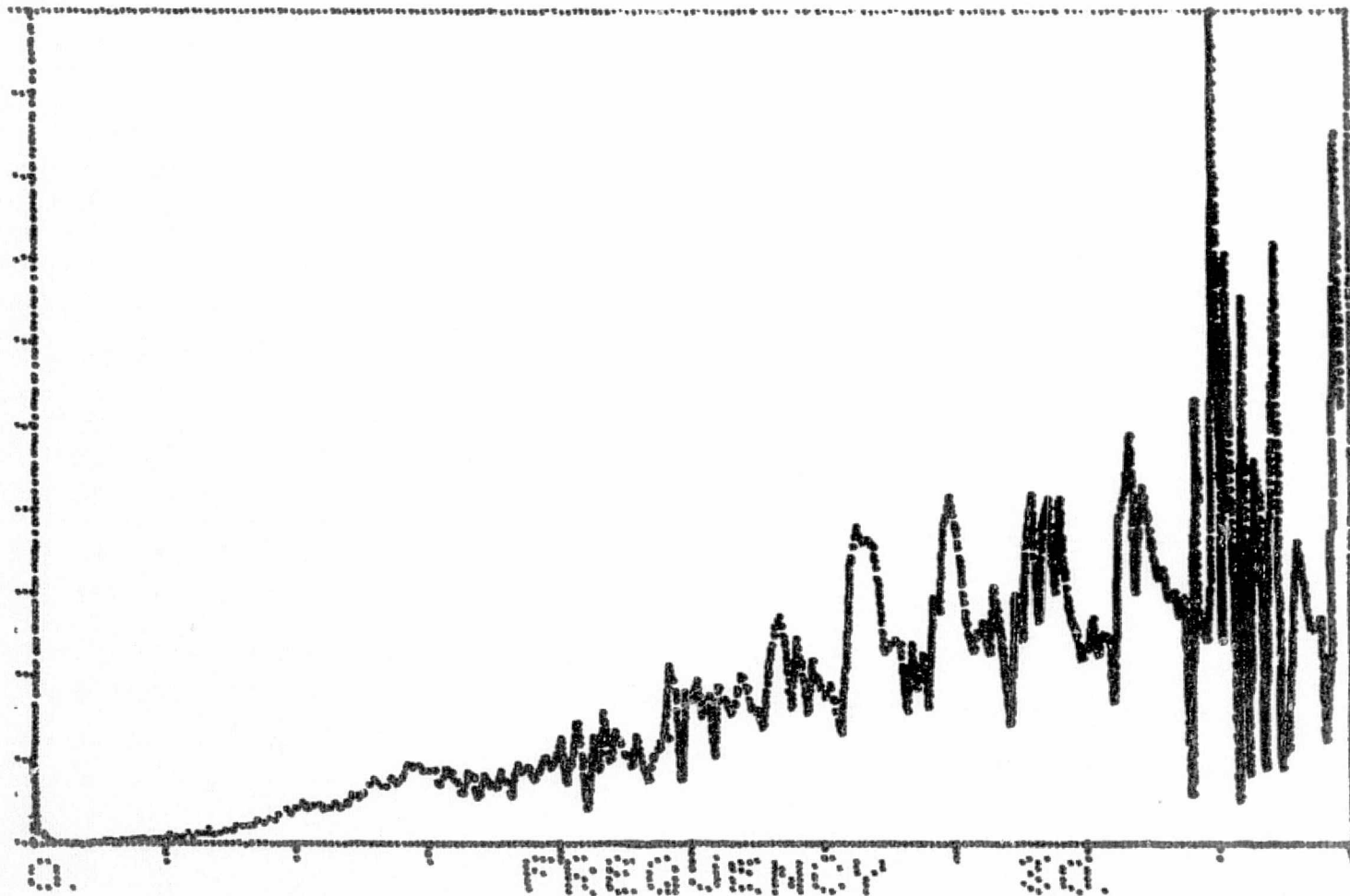
SIZE= 256

AL7/FL1

10.

naon

0.



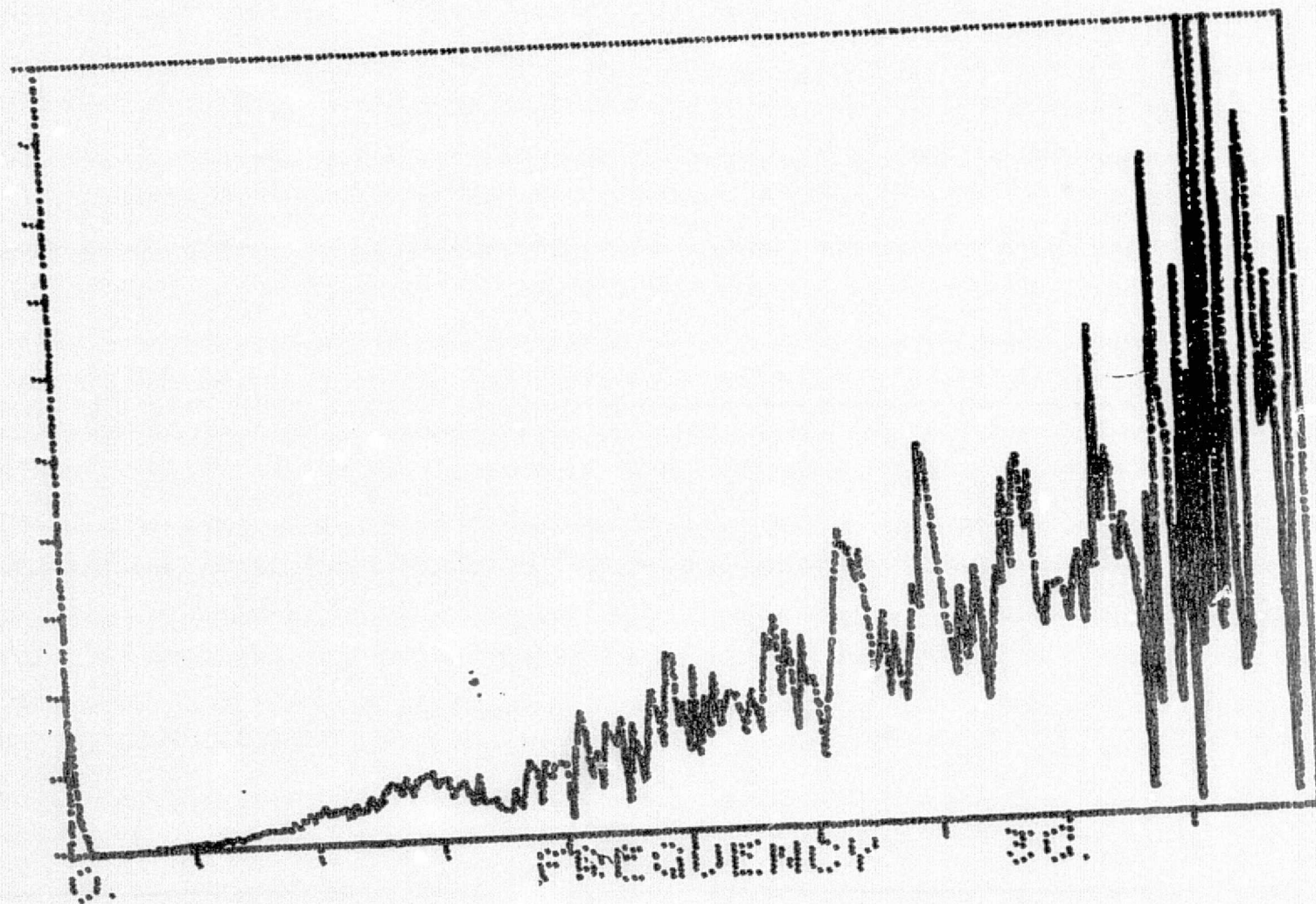
COMPLEX

SIZE= 256

30.

11904

0.



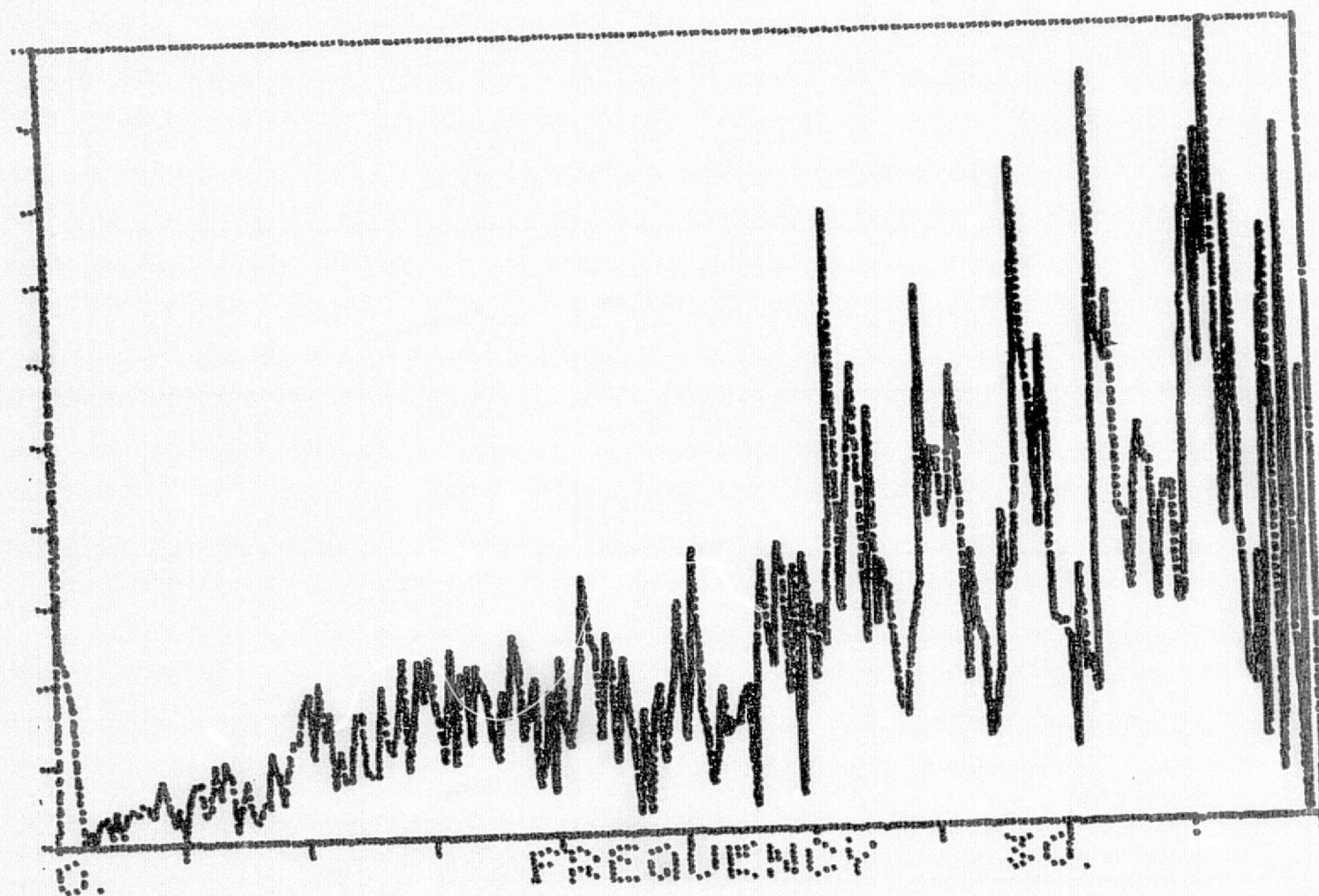
COMPLEX SIZE= 256

AL4/FL1

10.

1968

0.



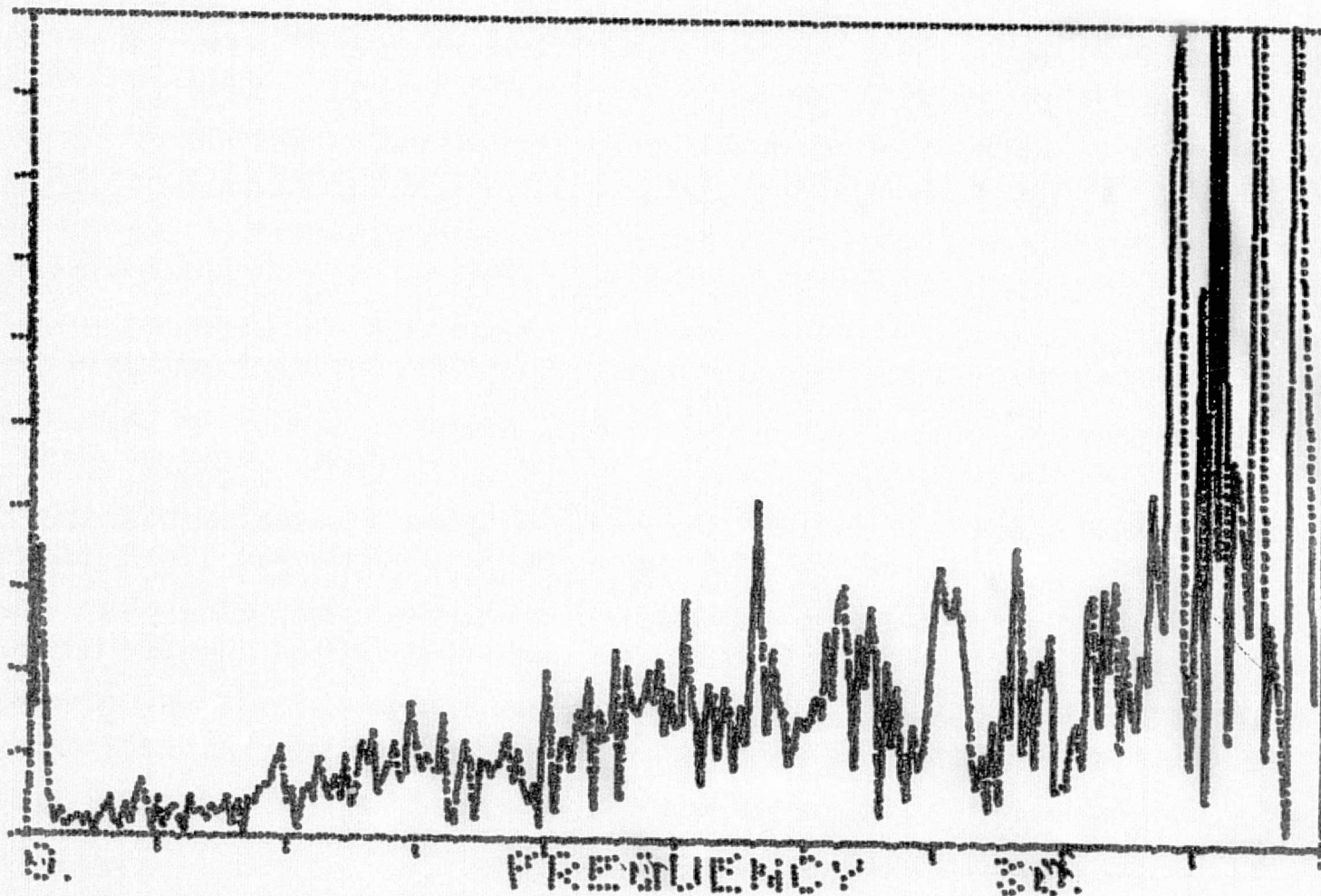
COMPLEX

SIZE

256

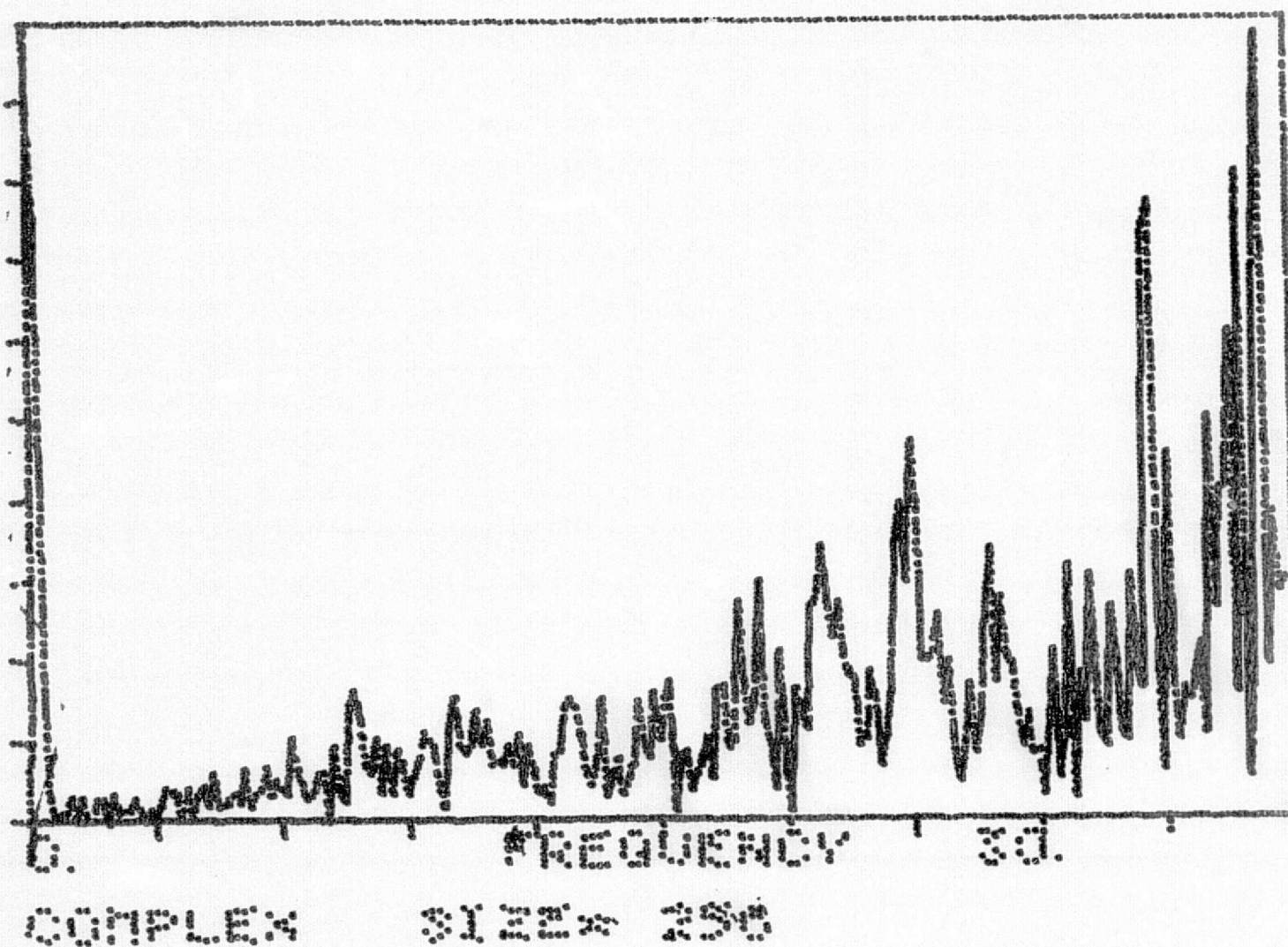
10.

11000



COMPLEX

8122- 250

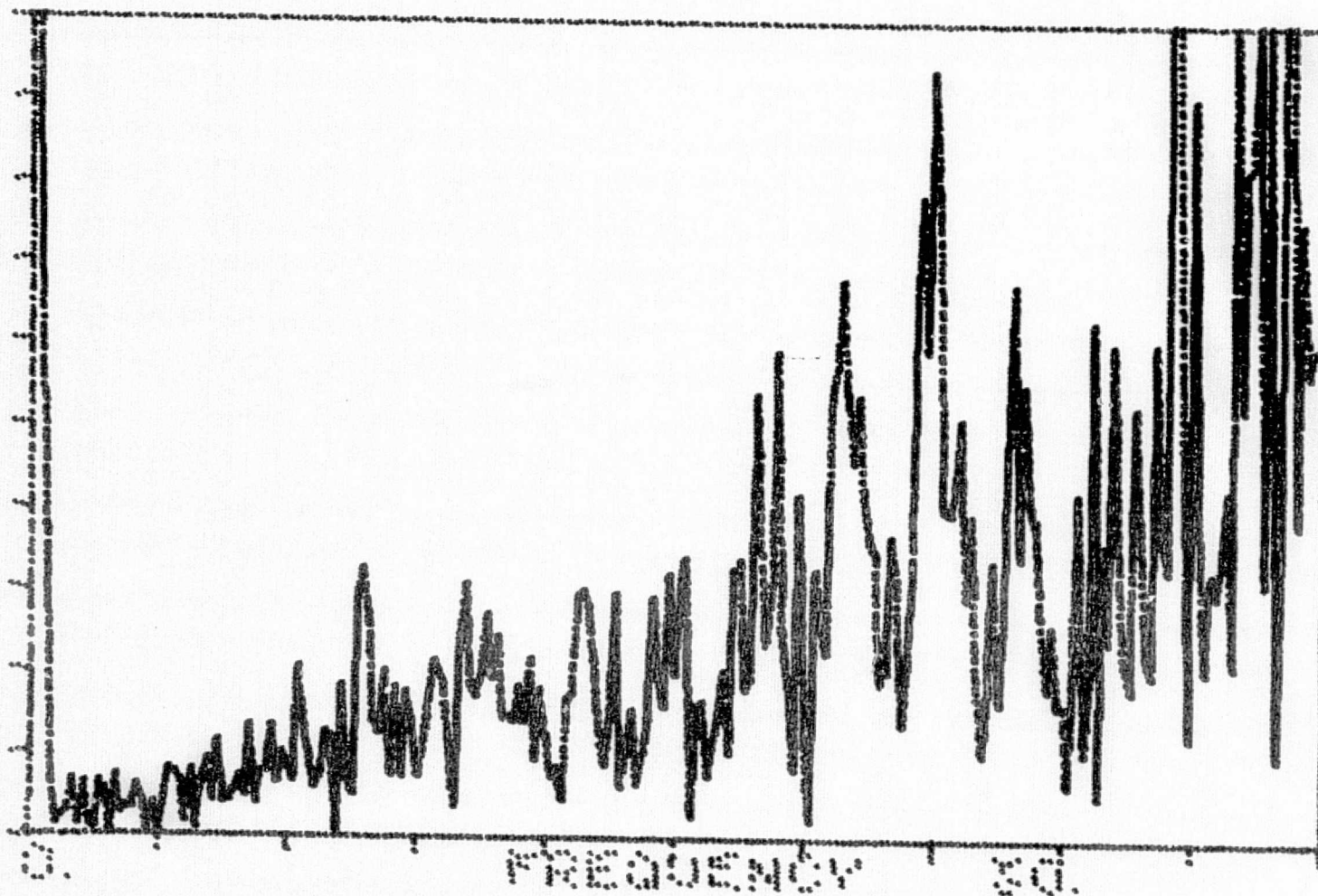


AL9/FL1

10.

1990

0.



COMPLEX

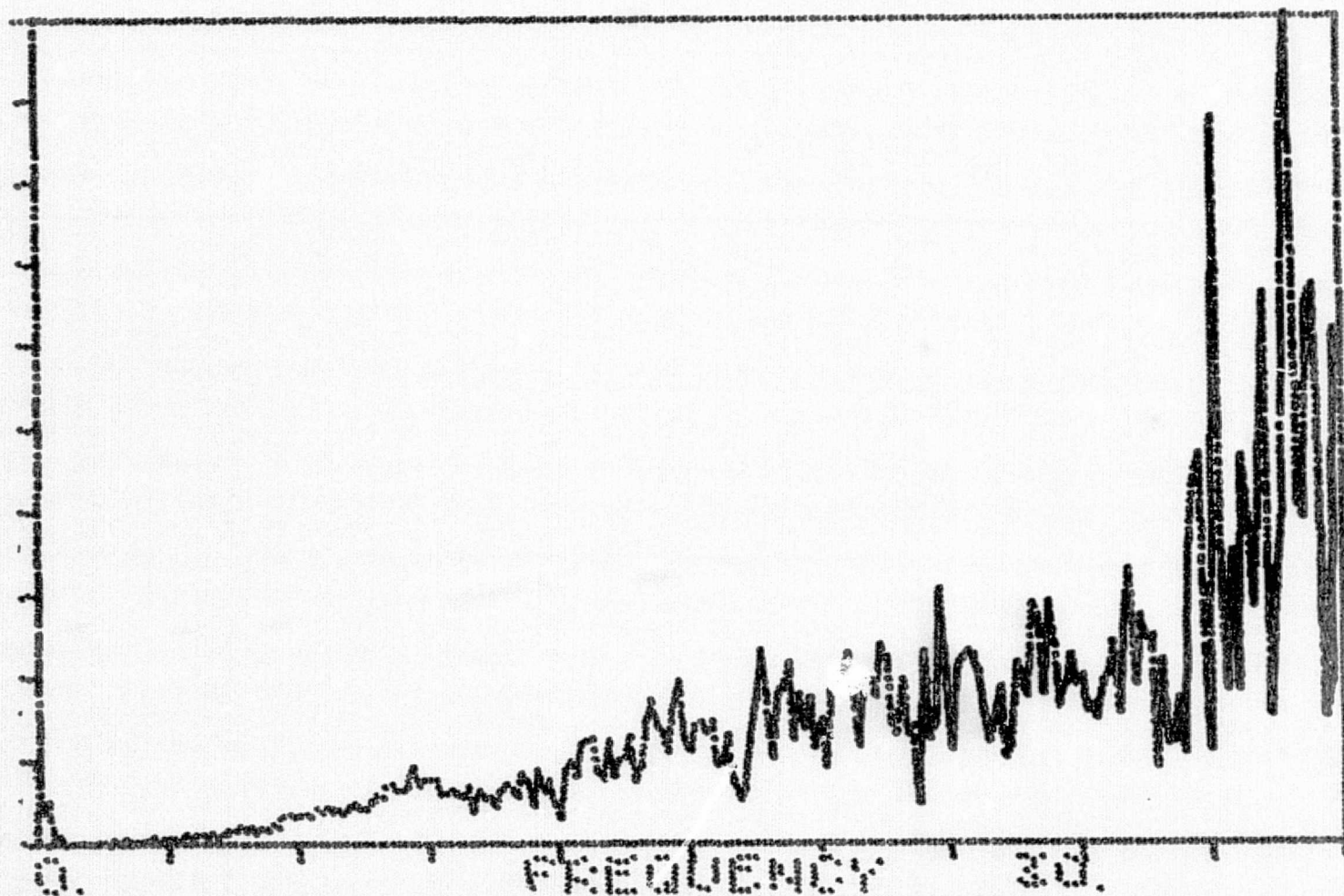
SIZE = 256

AL9/FL1

10.

mag

0.



COMPLEX

SIZE 350

0.

FROM

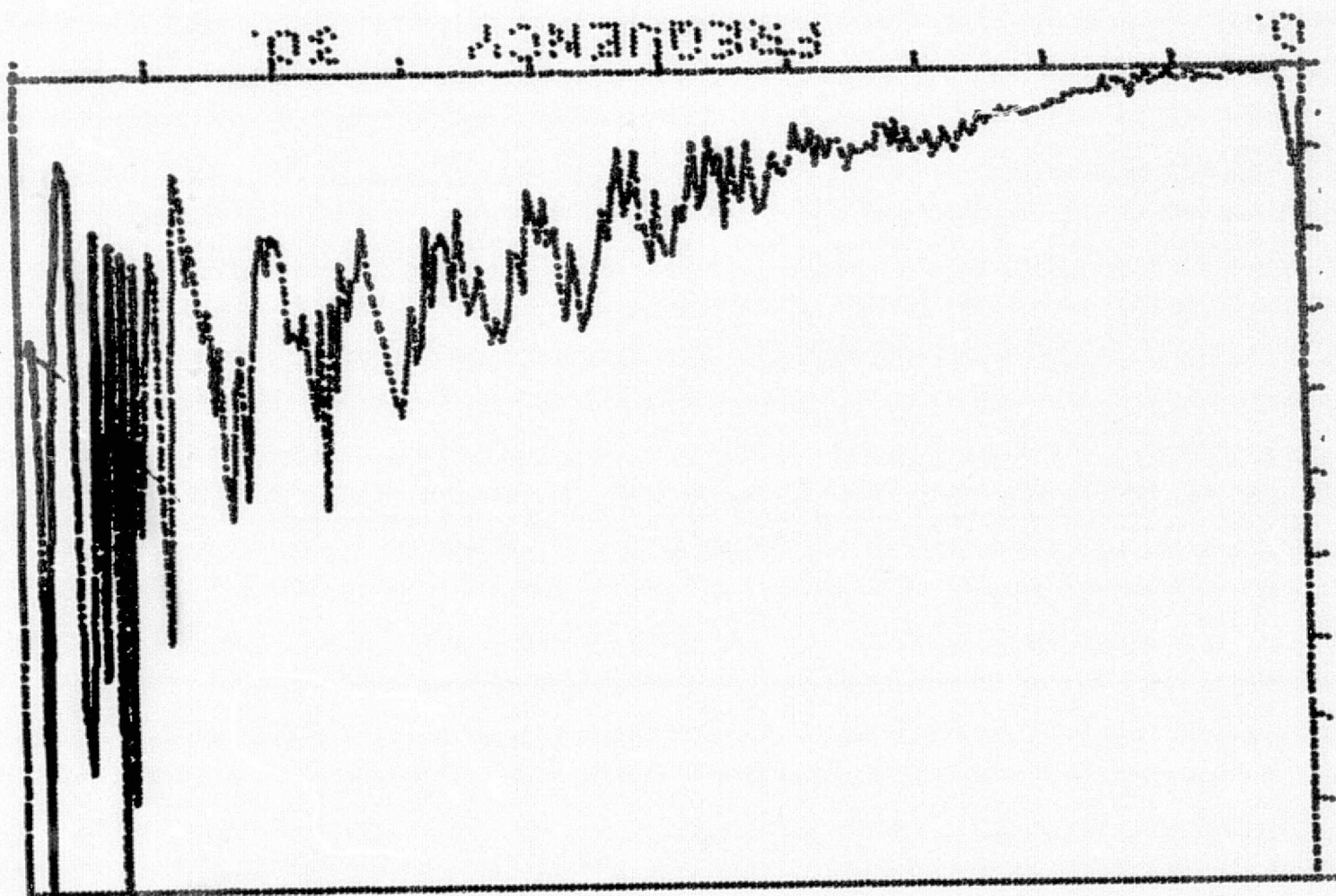
TO

COMPLEX

SIZE = 256

Frequency

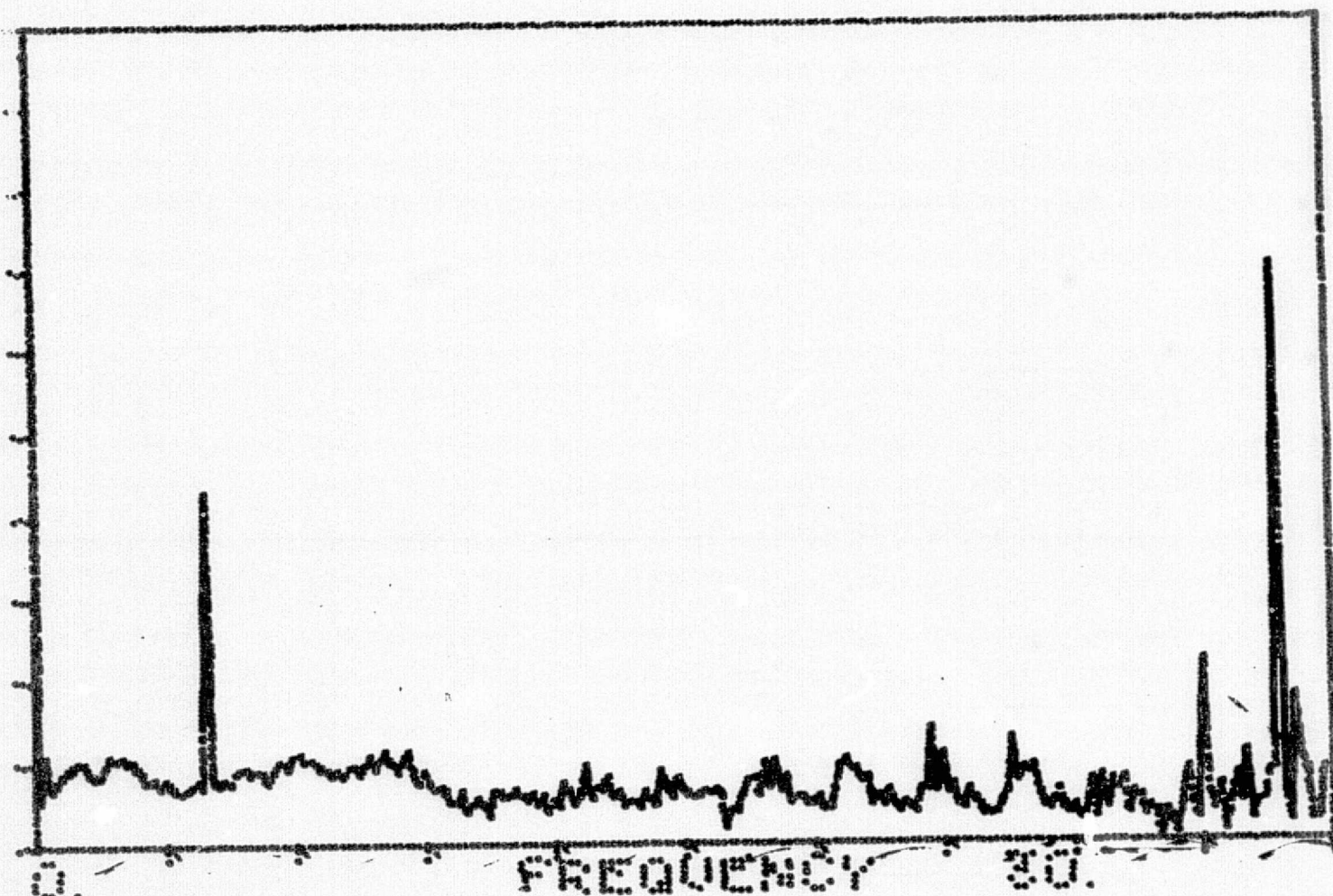
AL12/FL1



1.

MAGN

0.



COMPLEX

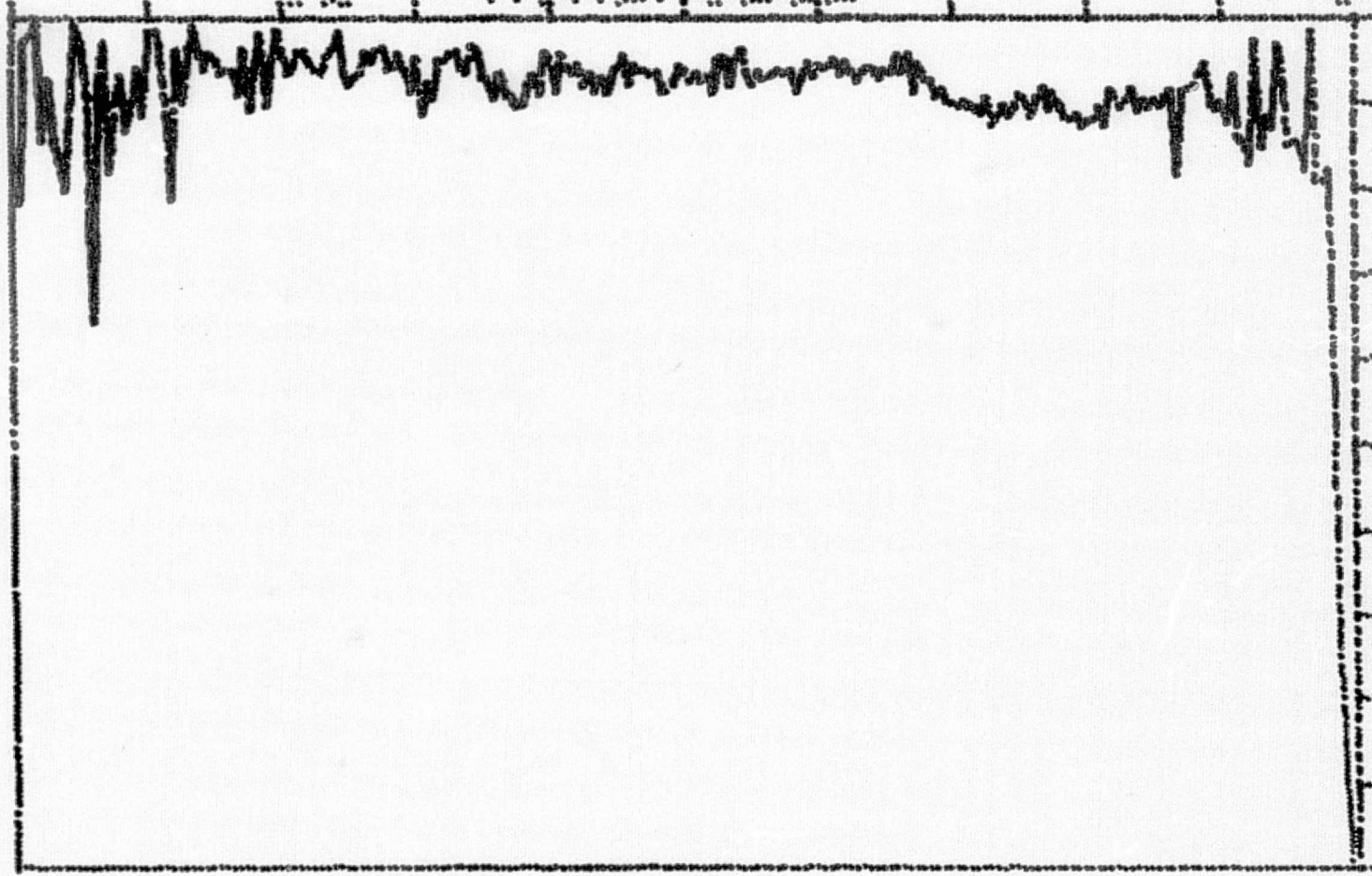
SIZE= 298

DL1/FL1

DL2/FL1

complex size 350

frequency 30

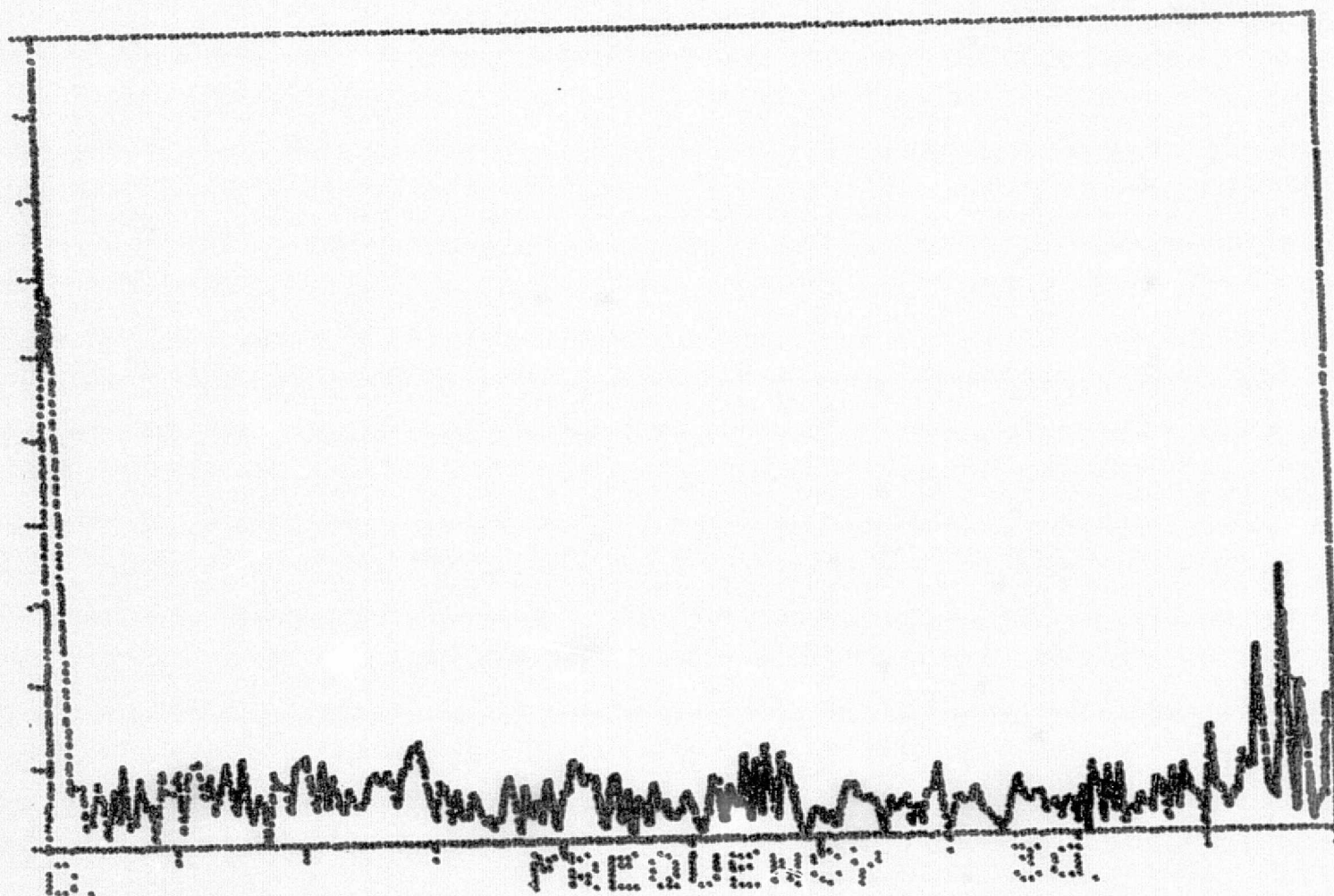


NOB4

1

5
mag

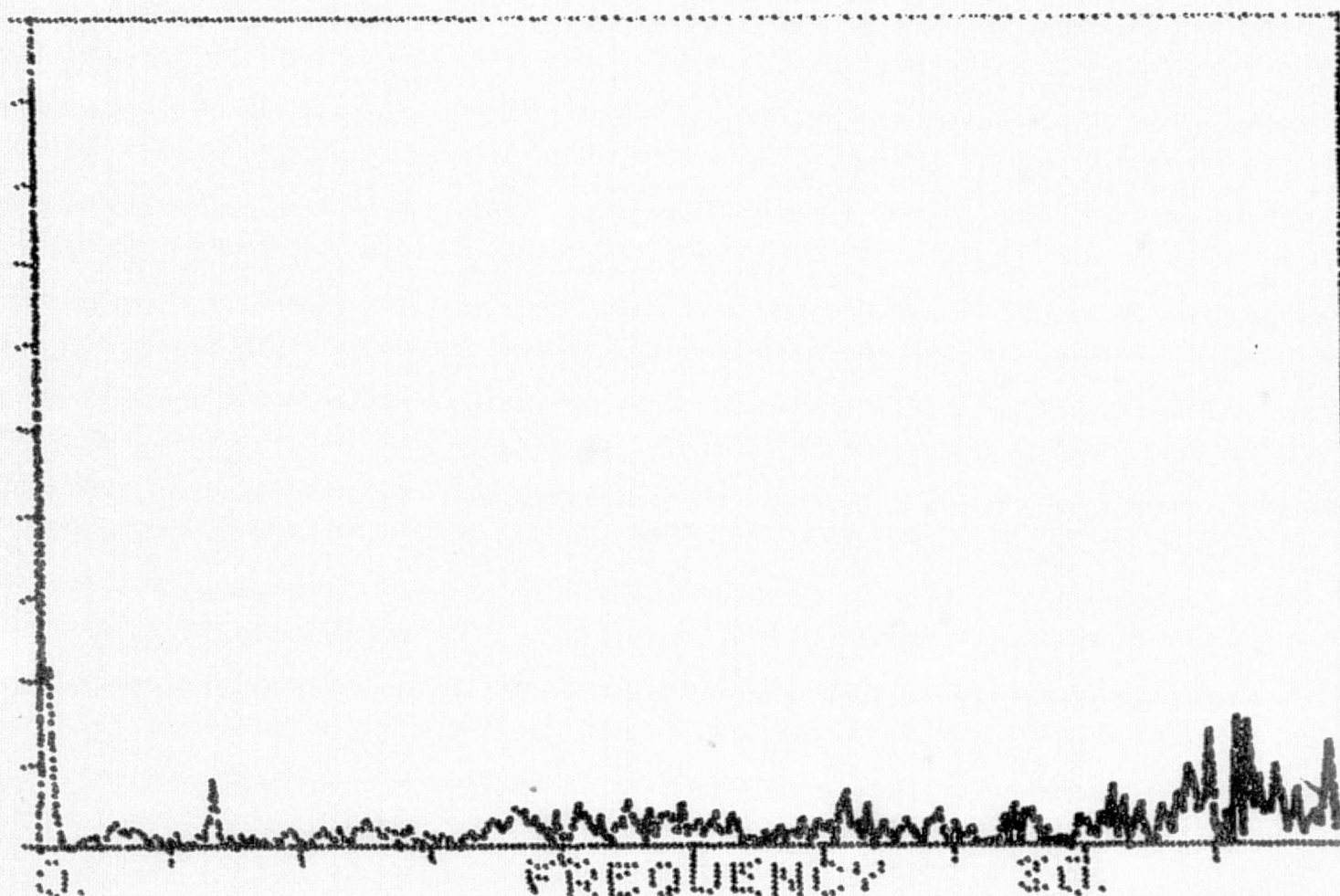
0.



complex

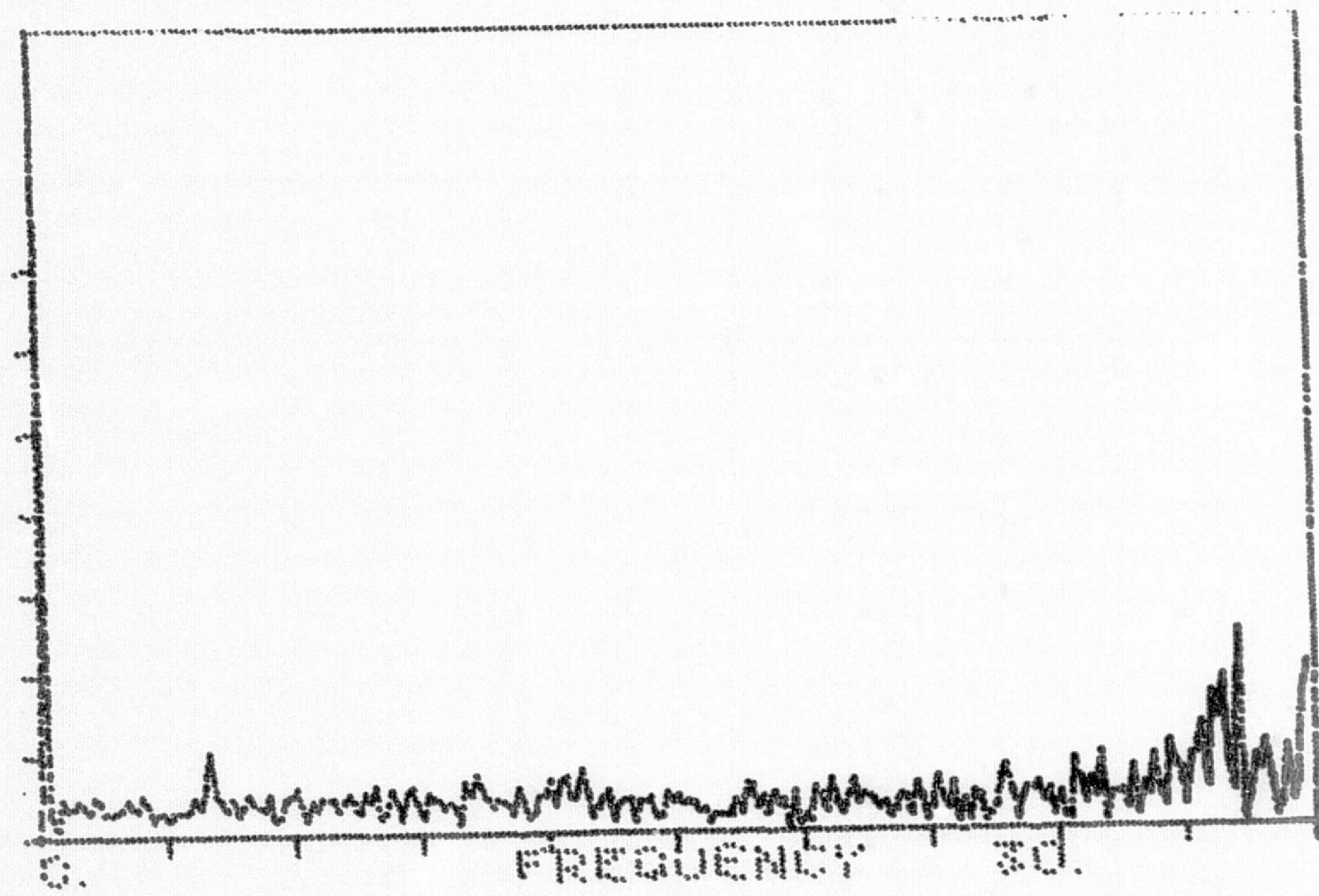
size 256

5
MAGN



COMPLEX

SIZE = 356

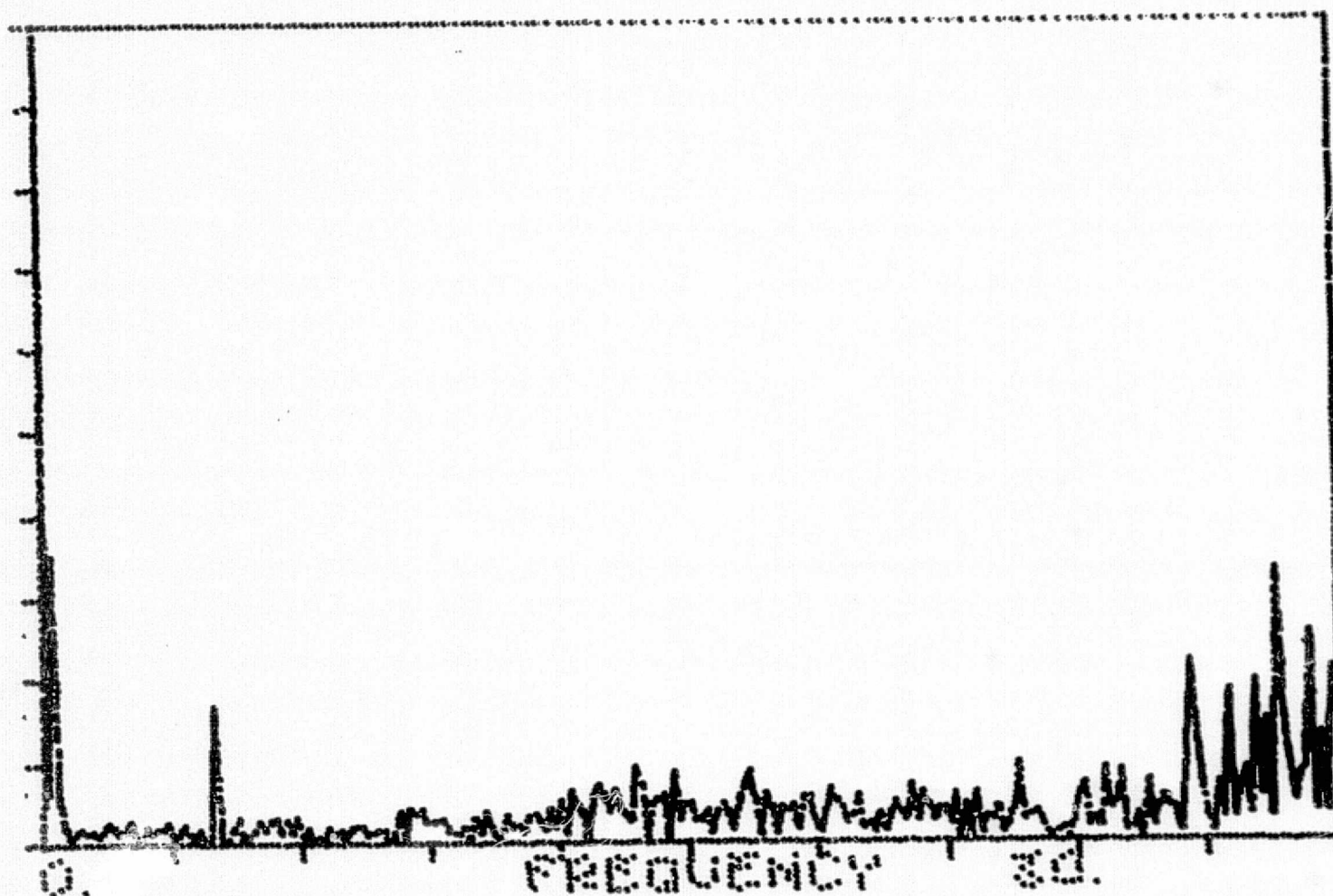


COMPLEX SIZE= 256

5

HAON

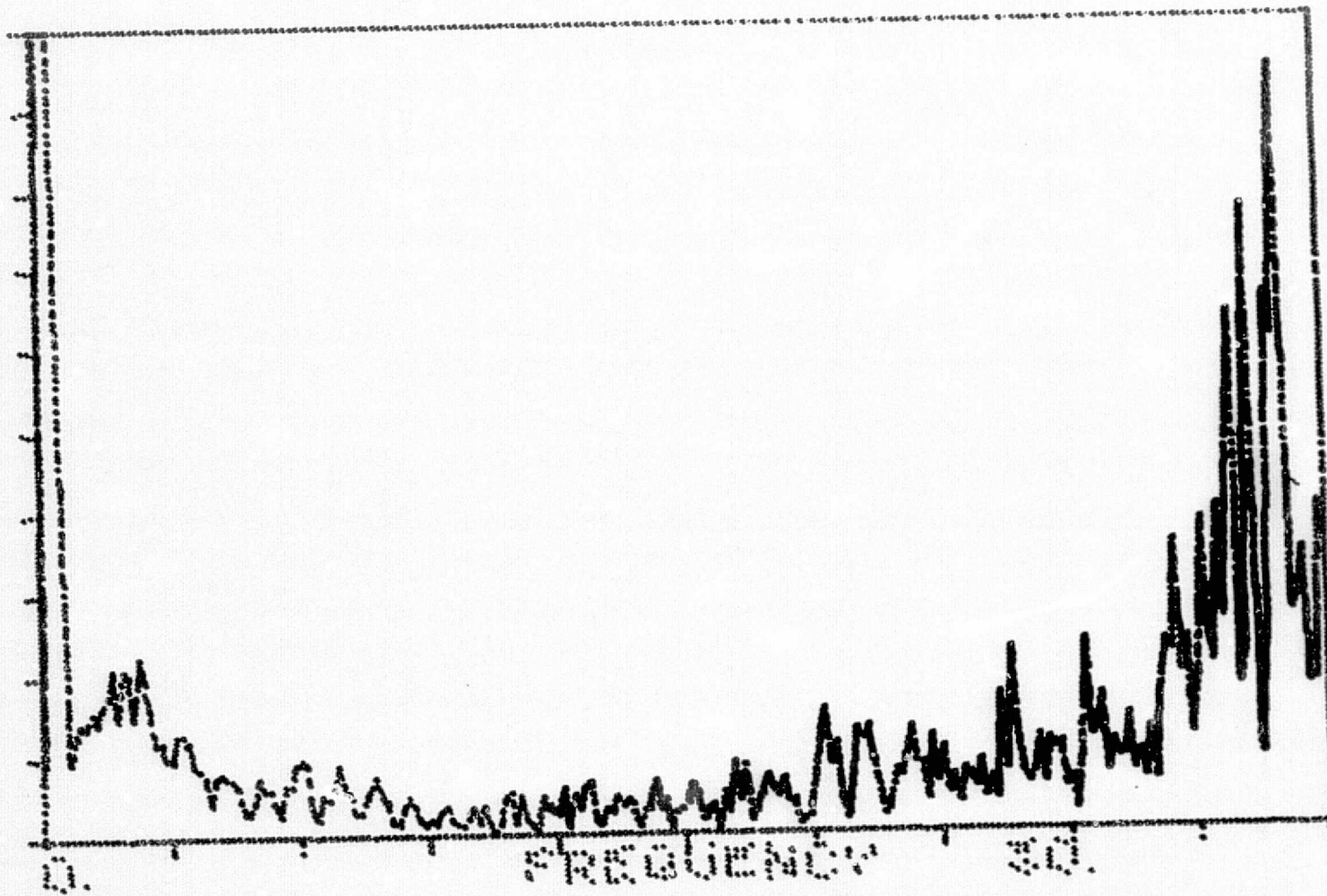
a.



COMPLEX

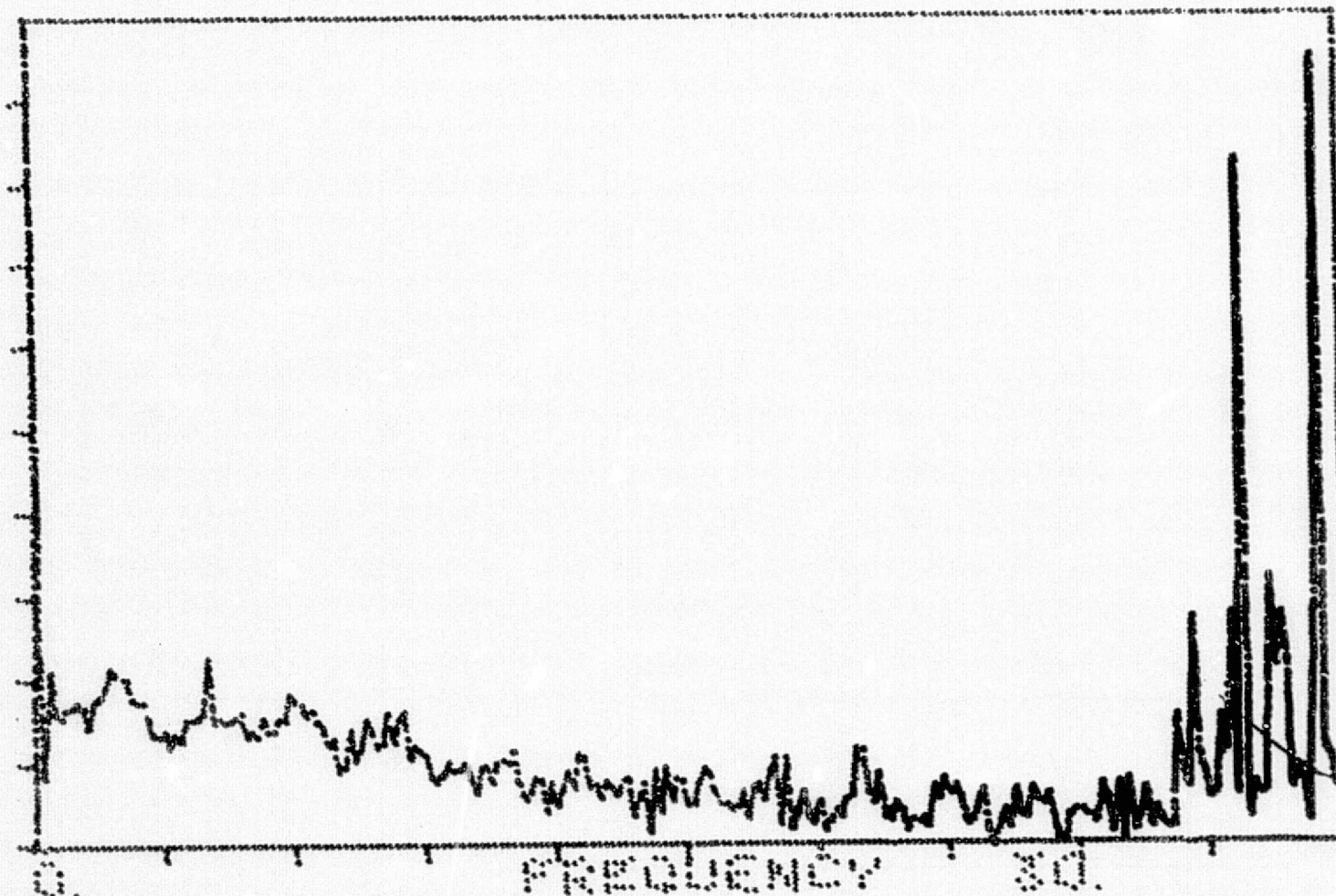
SIZE= 250

DL6/FL1



COMPLEX SIZE= 256

5
HIGH



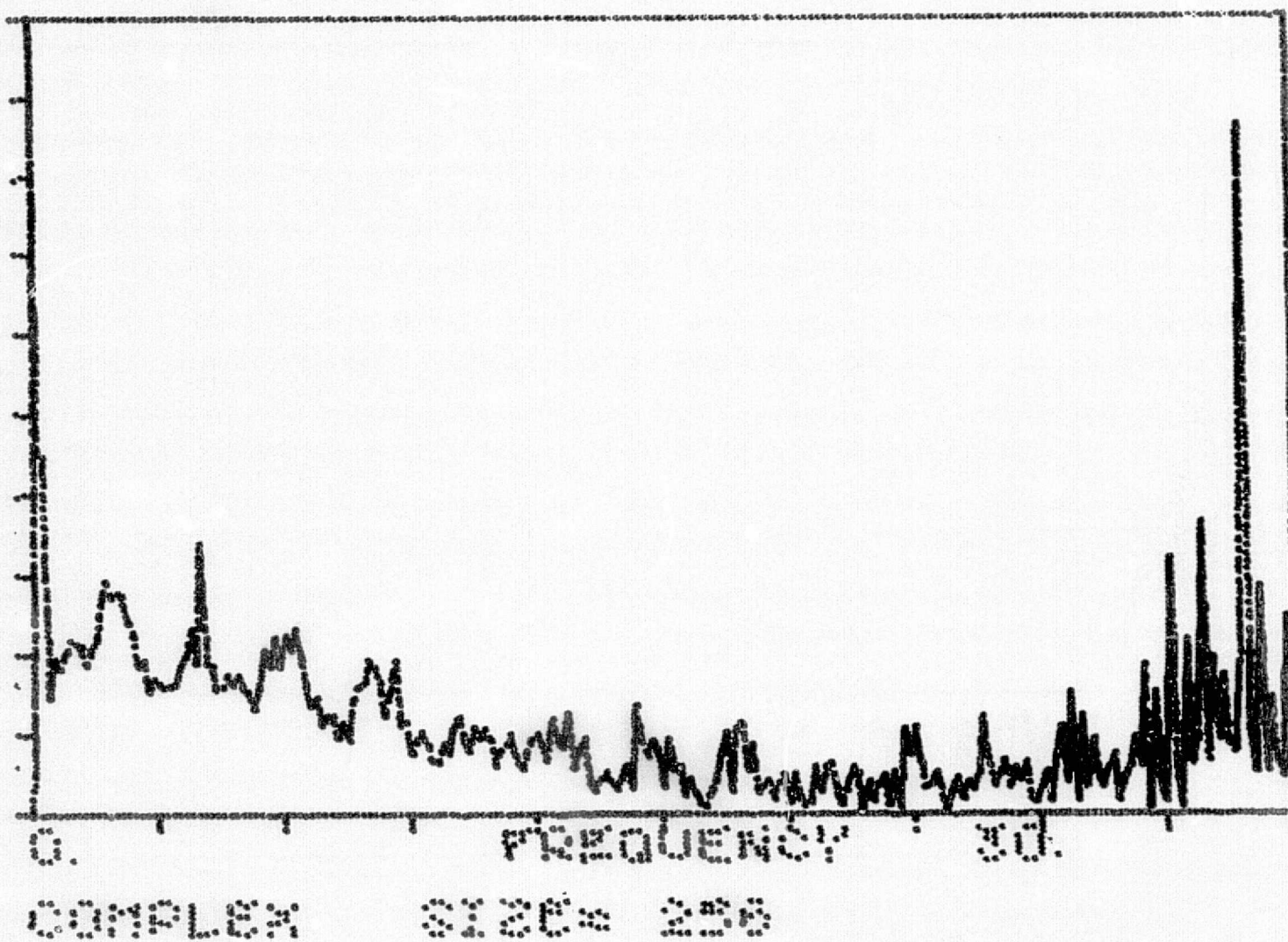
0.

COMPLEX SIZE= 256

8

NRGN

Q.

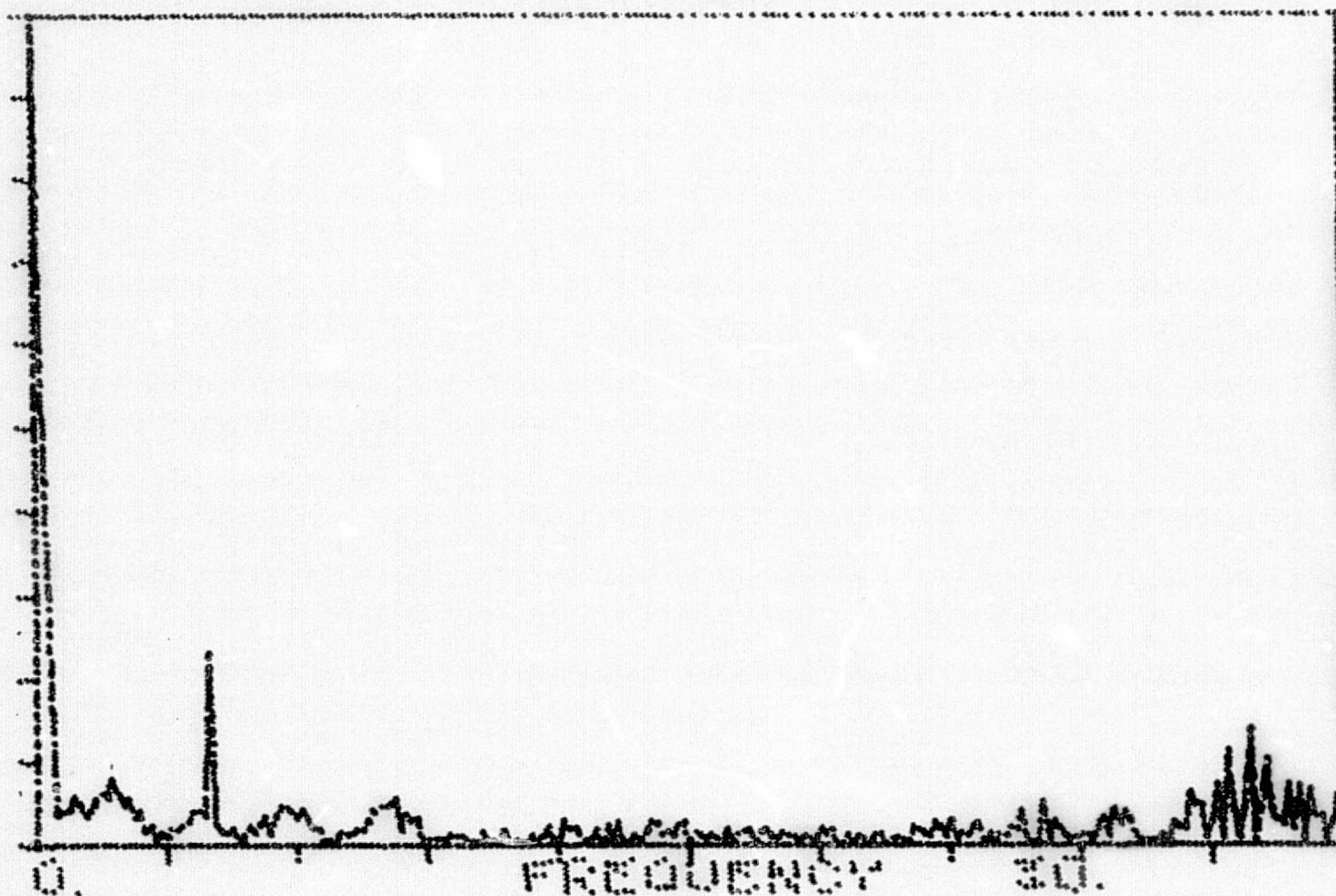


DL9/FL1

. 5

MAGN

0.



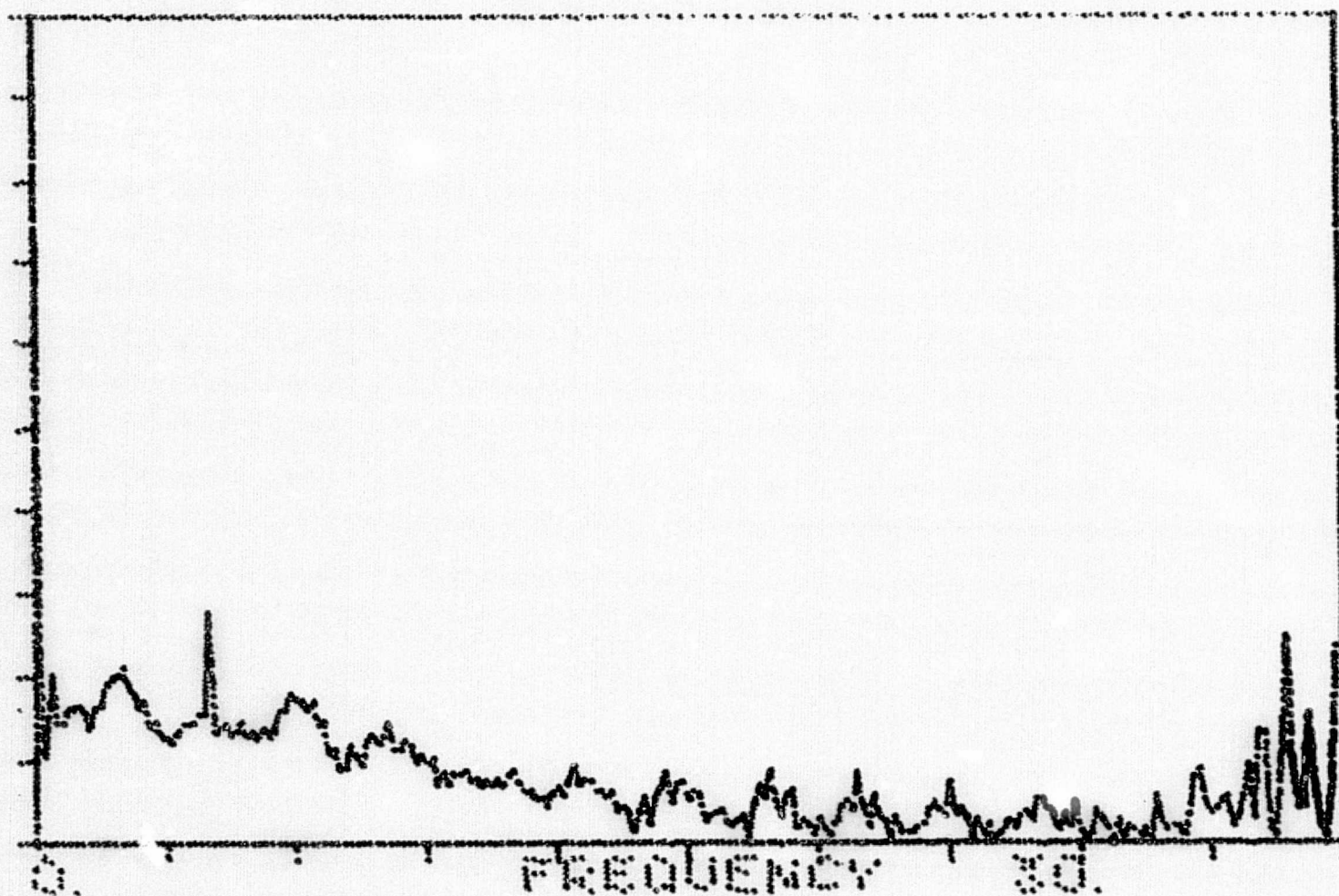
COMPLEX

SIZE= 256

5

MAGN

0.



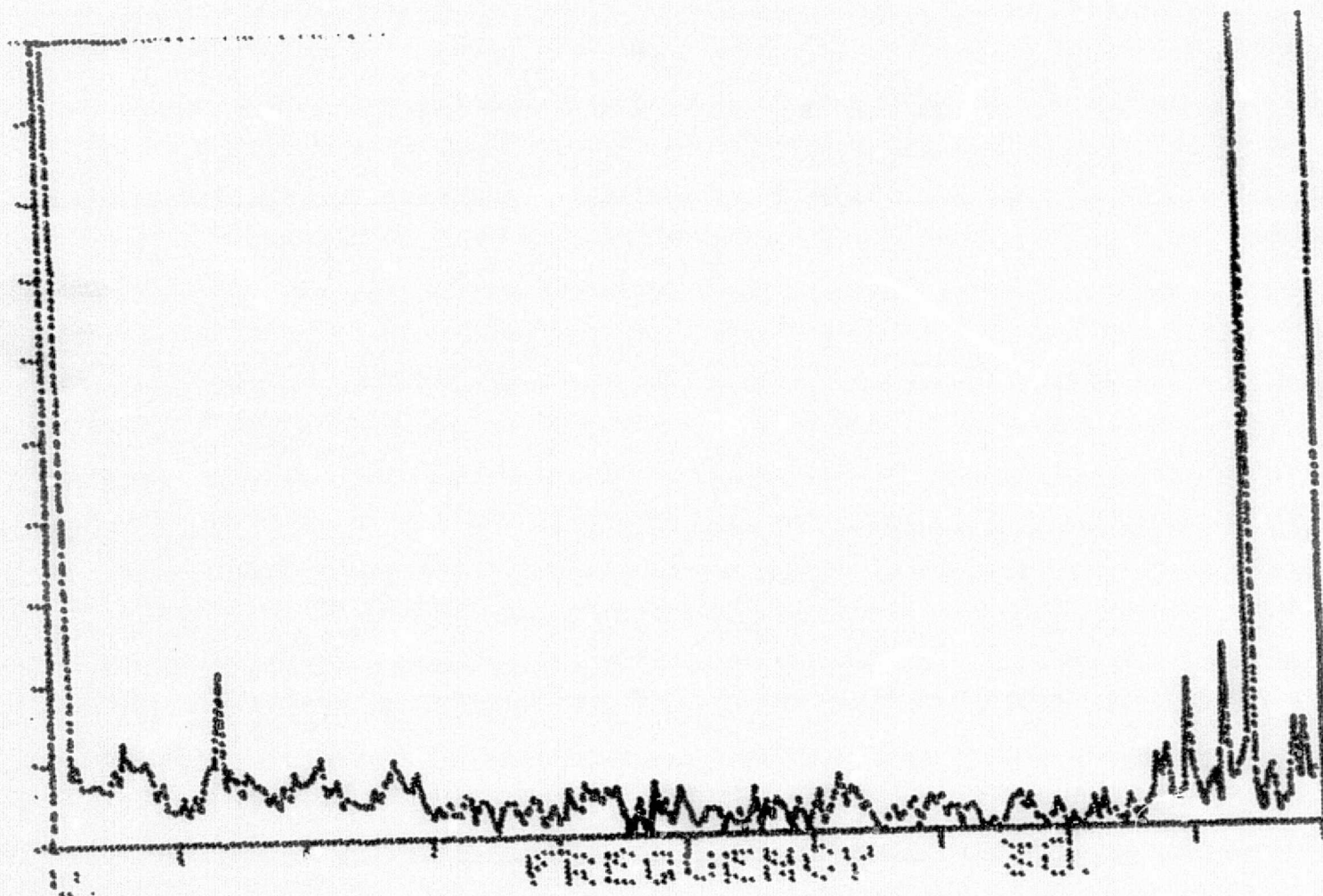
COMPLEX

SIZE= 256

S

1964

0.



COMPLEX

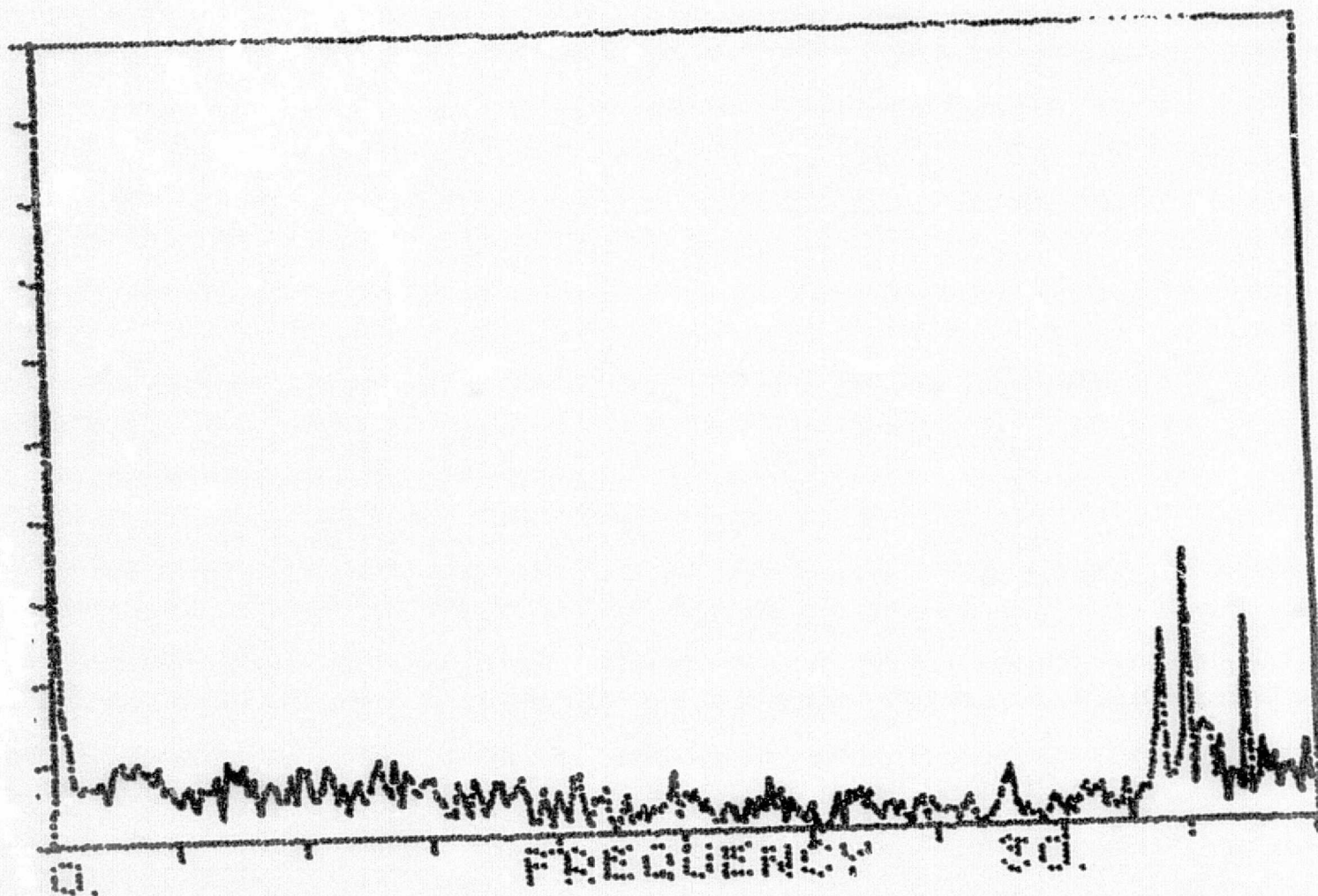
SIZE= 256

DL12/FL1

5

1904

0.



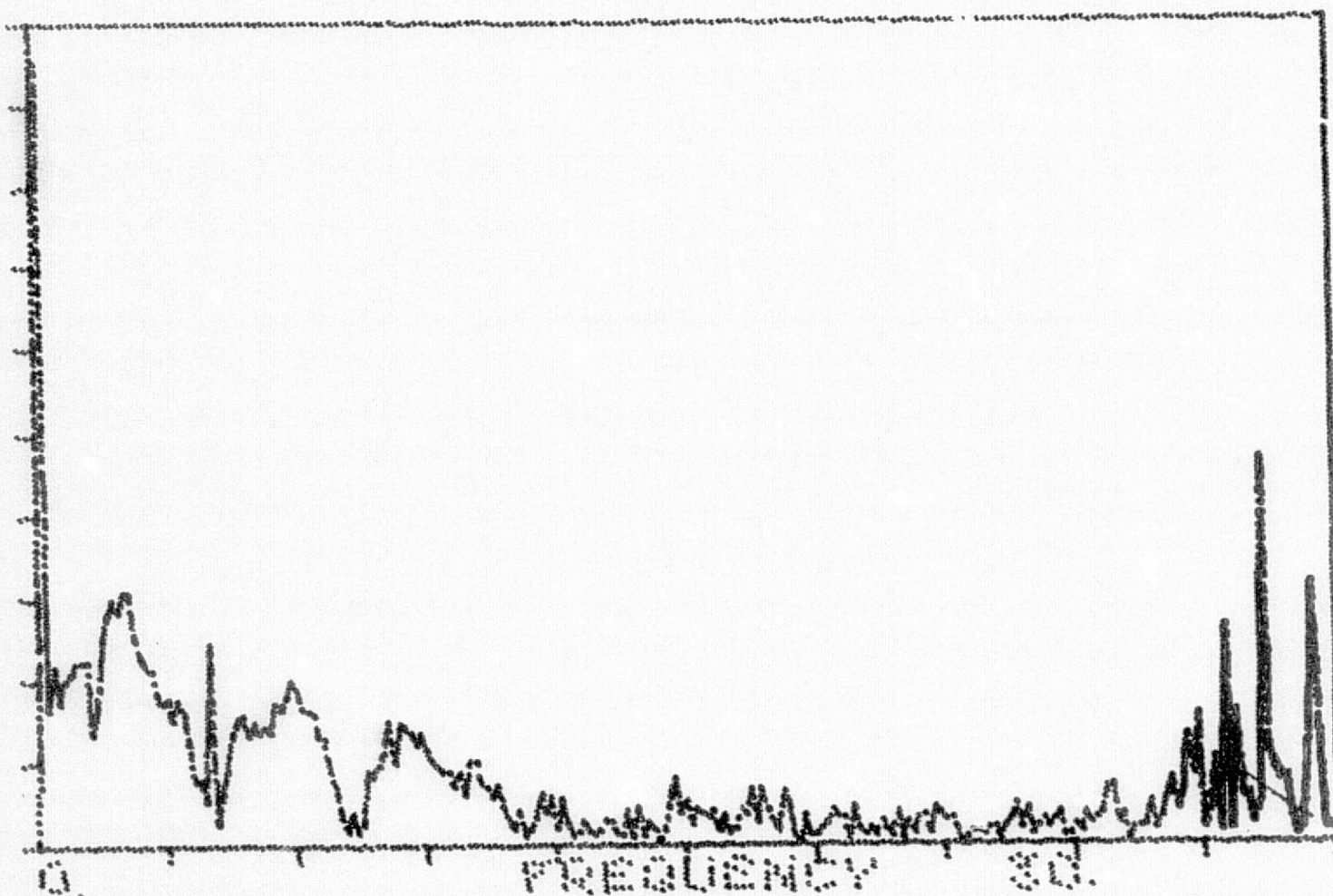
CONFLX

SIZE= 256

DL13/FL1

9
npon

0.

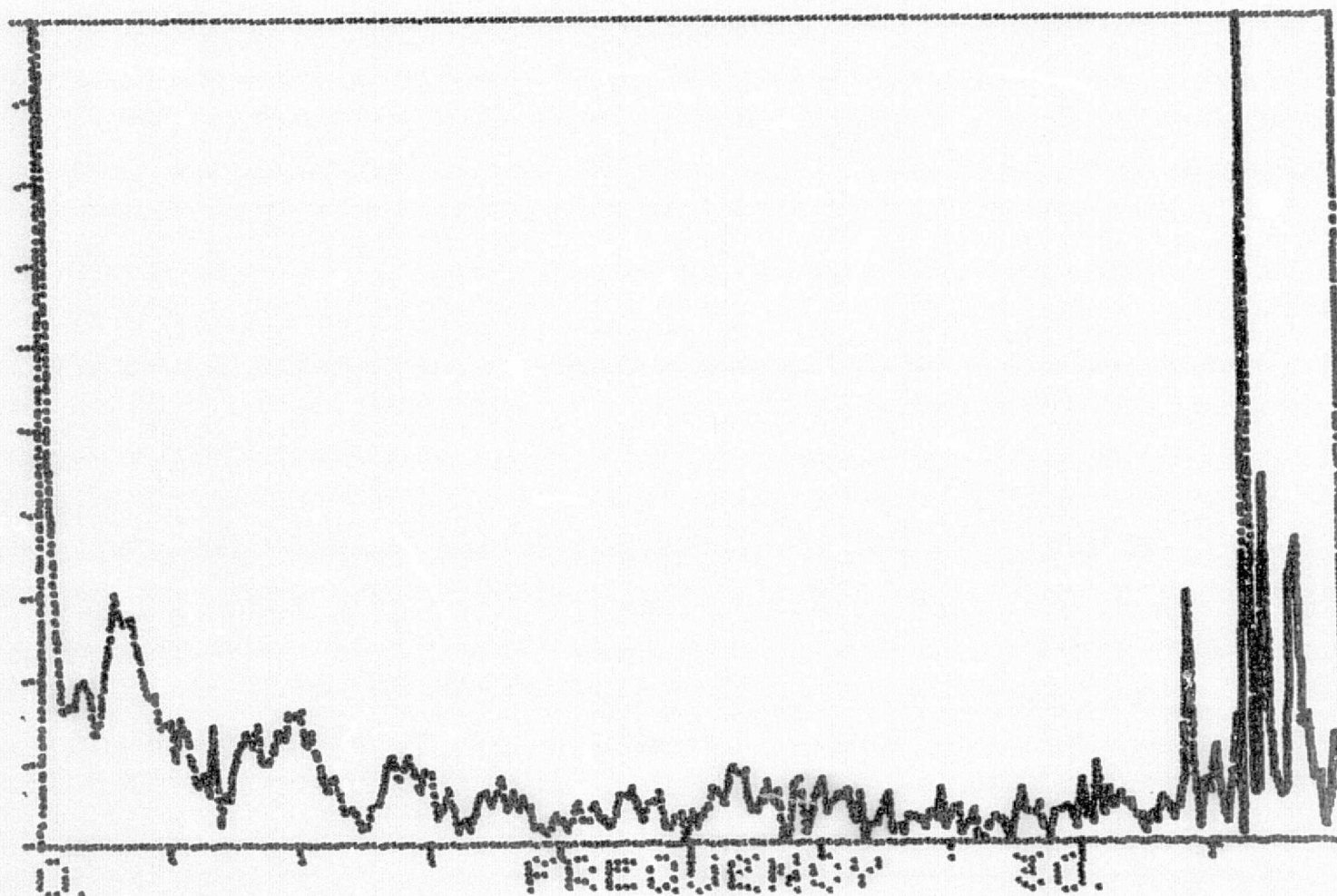


COMPLEX

SIZE= 256

3
HAGN

0.



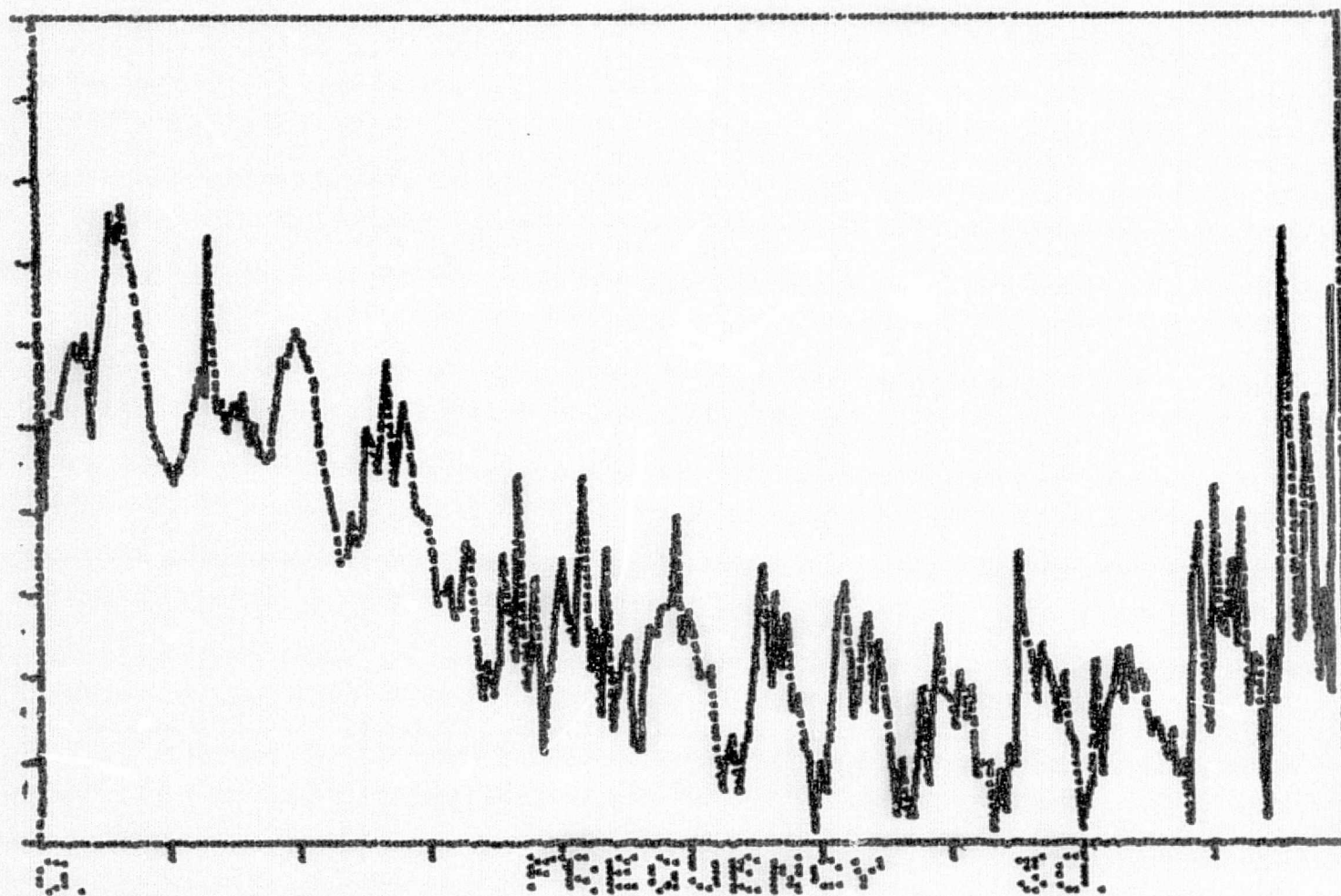
COMPLEX

SIZE= 256

5

NRGN

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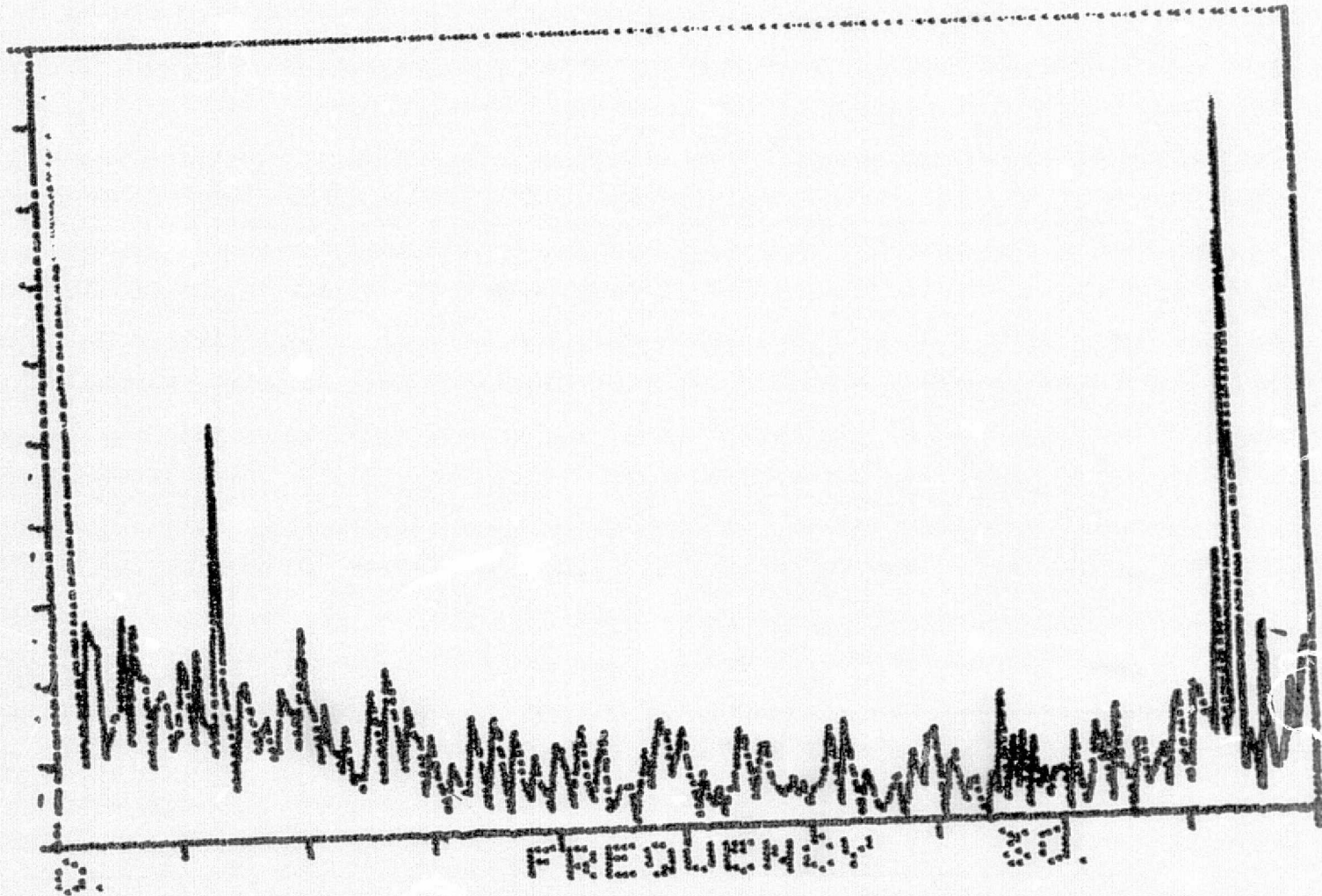


COMPLEX

SIZE= 256

i.

high



COMPLEX

SIZE 256

DL17/FL1

VOLUME IIRUN 9 TEST DATA

Y-AXIS, 7070 POUND/ACTUATOR TEST LEVEL,
ACTUATORS 180° OUT OF PHASE

1 HEADING: TRAIN TRACK TRANSFER 7070 LB TEST 3/18/75

SWEEP PARAMETERS:

2 MODE 1=LOG, 0=LIN: 1.
 3 TYPE 1=UNI-DIRECTIONAL, 0=BI-DIRECTIONAL: 1.
 4 START, END FREQ, HZ: .5 50.
 FREQ RANGE -- OCTAVES, DECADES: 6.644 2.
 5 SPECIFICATION 1=RATE, 0=DURATION: 1.
 6 UNITS 1=OCT/MIN, 0=DEC/MIN: 1.
 7 RATE, OCT/MIN: 2.
 SWEEP DURATION -- MIN, SEC: 3. 19.

TEST LENGTH:

8 SPECIFICATION 1=TIME, 0=SWEEP CYCLES: 0.
 9 CYCLES: 1.
 TEST TIME -- HRS, MIN, SEC: 0. 3. 19.

START-UP AND SHUT-DOWN:

10 START-UP TIME, SEC: 120.
 11 SHUT-DOWN TIME, SEC: .5

VIBRATION LIMITS (P-P):

12 DISPLACEMENT, IN: 5000.
 13 VELOCITY, IN/SEC: 9999.
 14 ACCELERATION, G: 450.

REFERENCE CONTROL SPECTRUM:

15 TYPE, VALUE, FREQ, ABORT LIMIT: 1. 1867. 1.98 3.
 16 TYPE, VALUE, FREQ, ABORT LIMIT: 2. 60. 50. 3.
 17 TEST LEVEL (DB BELOW REF): 3.

ACCELERATION SIGNALS:

18 NR OF SIGNALS: 2.
 CHANNEL NRS: 1. 2.
 19 1=PEAK, 0=RMS: 0.
 20 SENSITIVITY, MV/G: 22.22
 21 STRATEGY 1=MAX, 0=AVG: 1.

LIMIT SIGNALS:

22 NR OF SIGNALS: 0.

ABORT LINES:

23 NR OF LINES: 0.

ALARM LINES:

24 NR OF LINES: 0.
 25 1=DUAL-CHANNEL A/D, 0=ACE: 1.
 26 COMPRESSION SPEED 2=HIGH, 1=NORMAL, 0=LOW: 1.

POST-TEST DOCUMENTATION

TRAIN TRACK TRANSFER 7070 LB TEST 3/18/75

COMPLETION STATUS: ABORTED DURING SWEEP 1 AT 23.75 HZ.
CONTROL LIMITS EXCEEDED.

TEST DURATION -- HRS, MIN, SEC: 0 2 47

MAX ABS CONTROL ERROR: 3.15 DB AT 23.73 HZ.

AVG ABS CONTROL ERROR: .3004 DB.

CONTROL
CHANNEL FREQ RANGE (HZ)

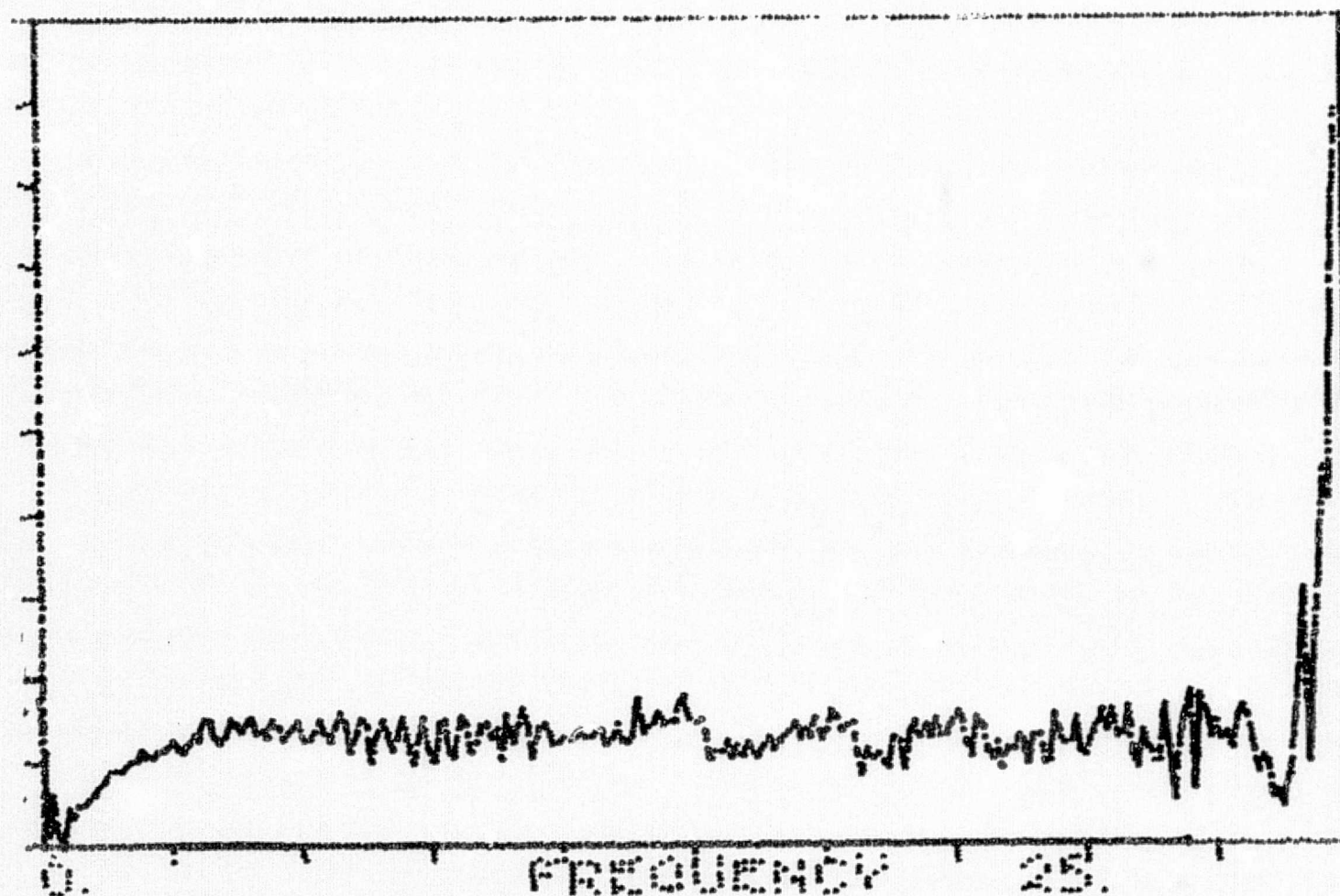
SWEEP 1

2	.5	--	.5
1	.5	--	1.89
2	1.89	--	3.153
1	3.153	--	12.85
2	12.85	--	22.6
1	22.6	--	22.96
2	22.96	--	22.98
1	22.98	--	23.75

5.

MAGN

0.



COMPLEX

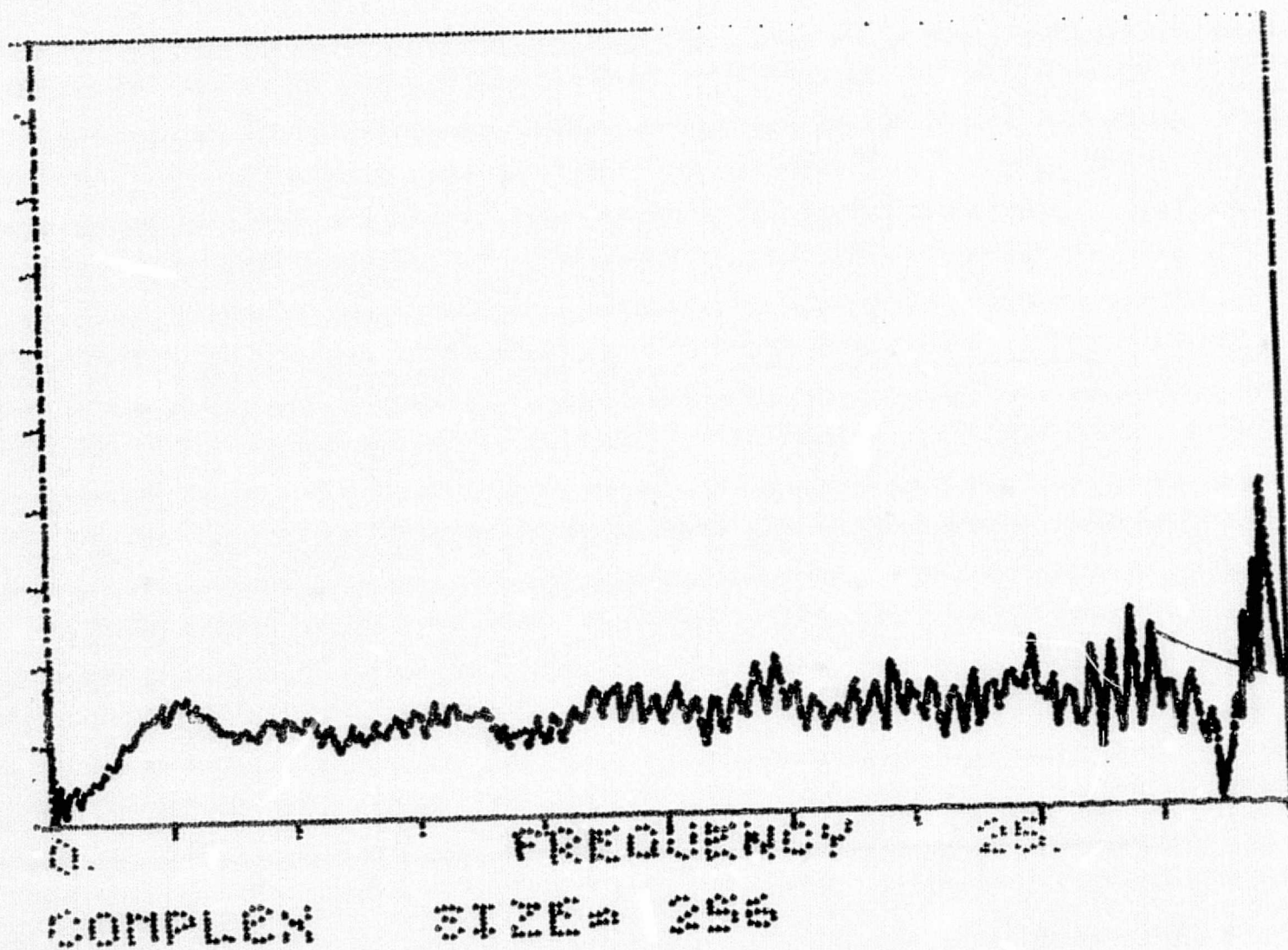
SIZE= 256

FL1/DRIVE

5.

NASH

0.

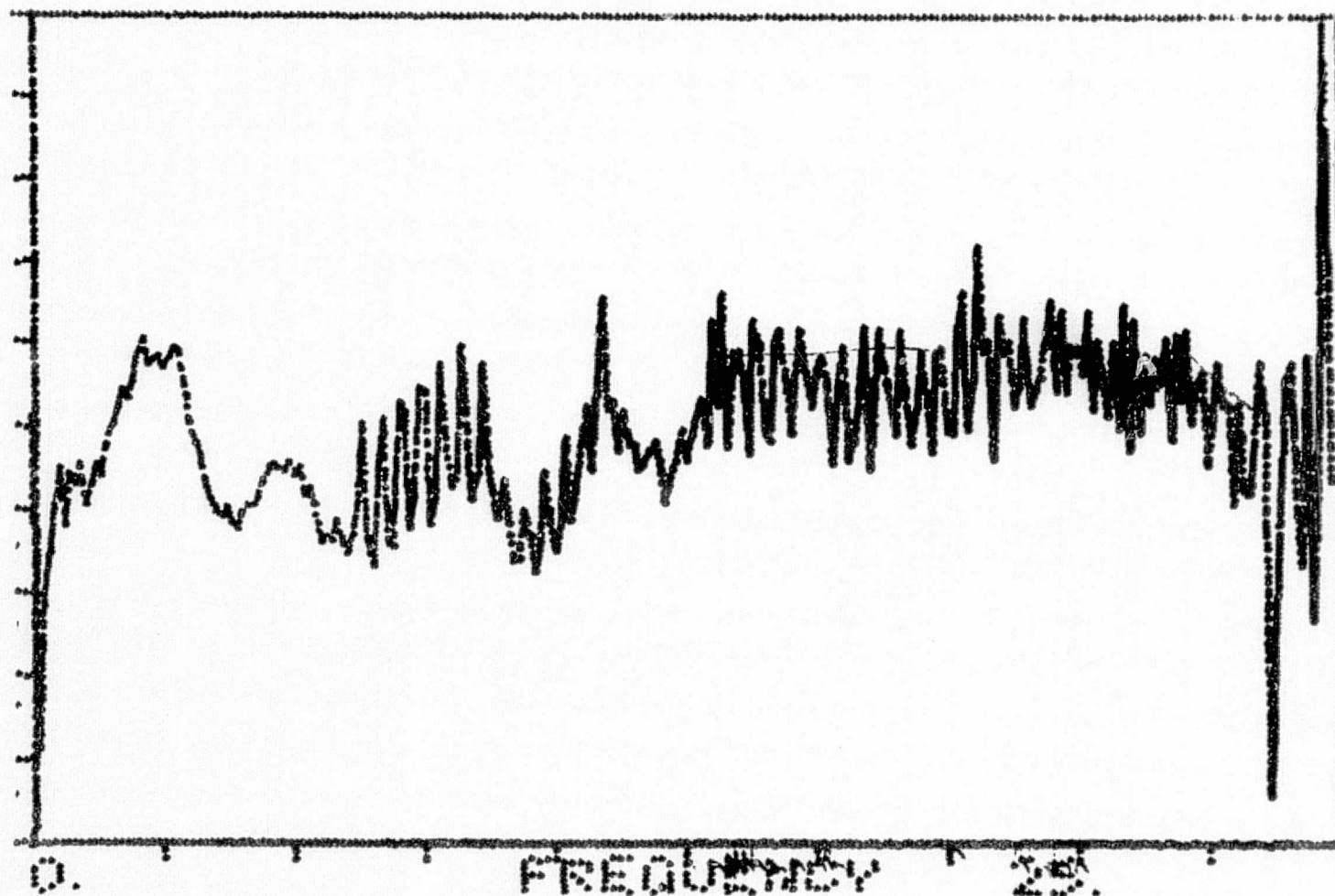


FL2/DRIVE

2.

MAGK

0.



COMPLEX

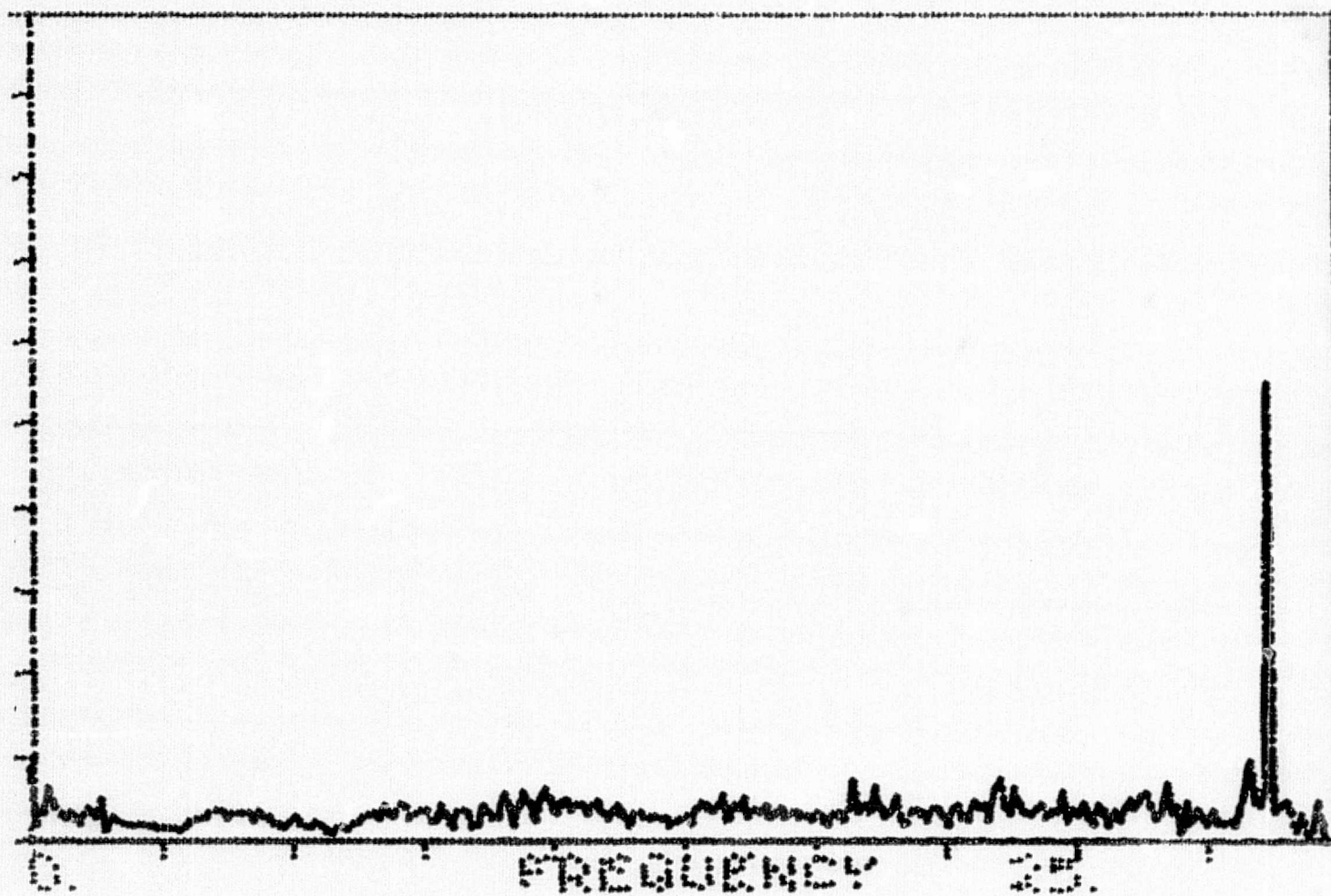
SIZE= 256

FL2/FL1

10.

11004

0.



COMPLEX

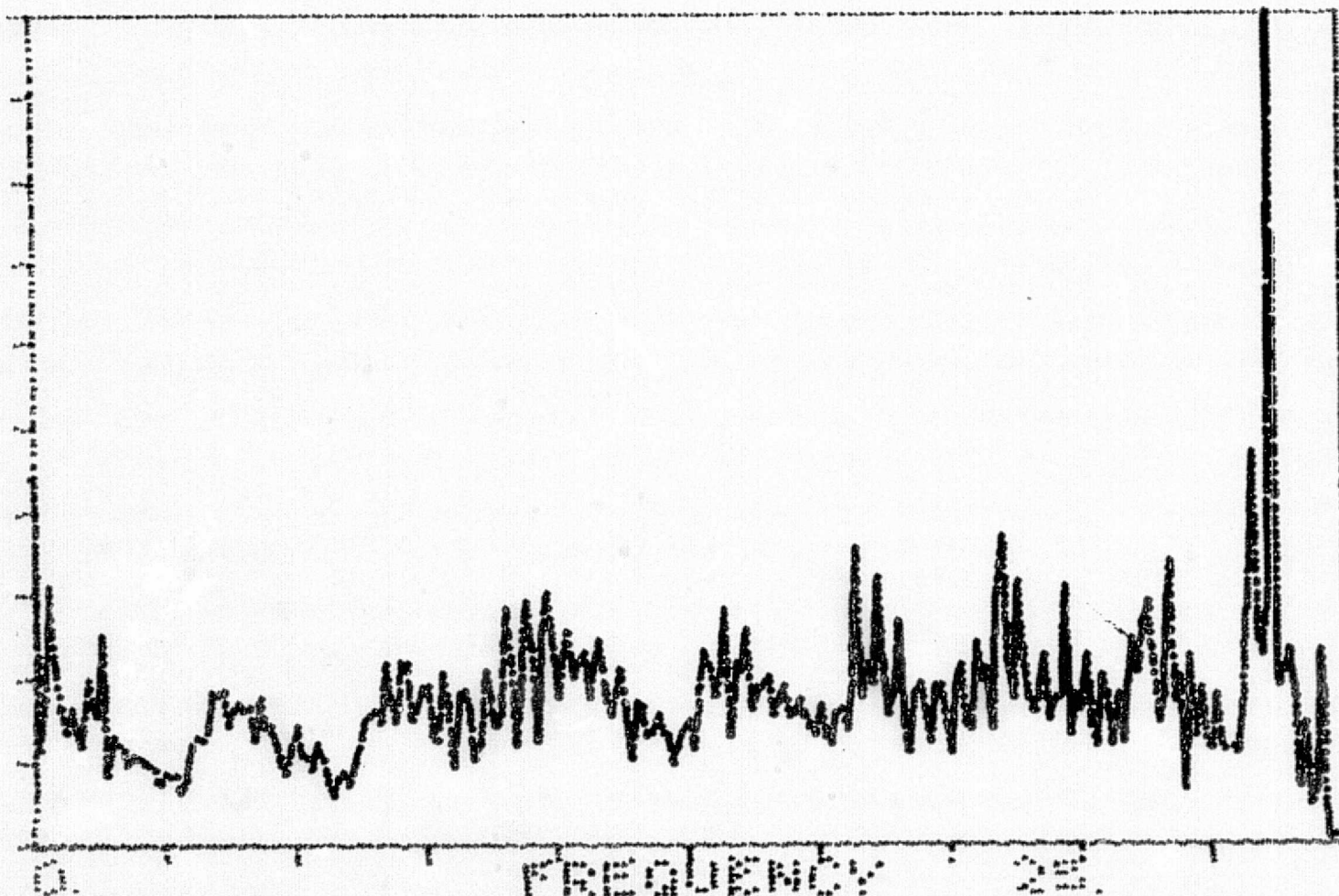
SIZE= 256

FV2/FL1

2.

MAGN

0.



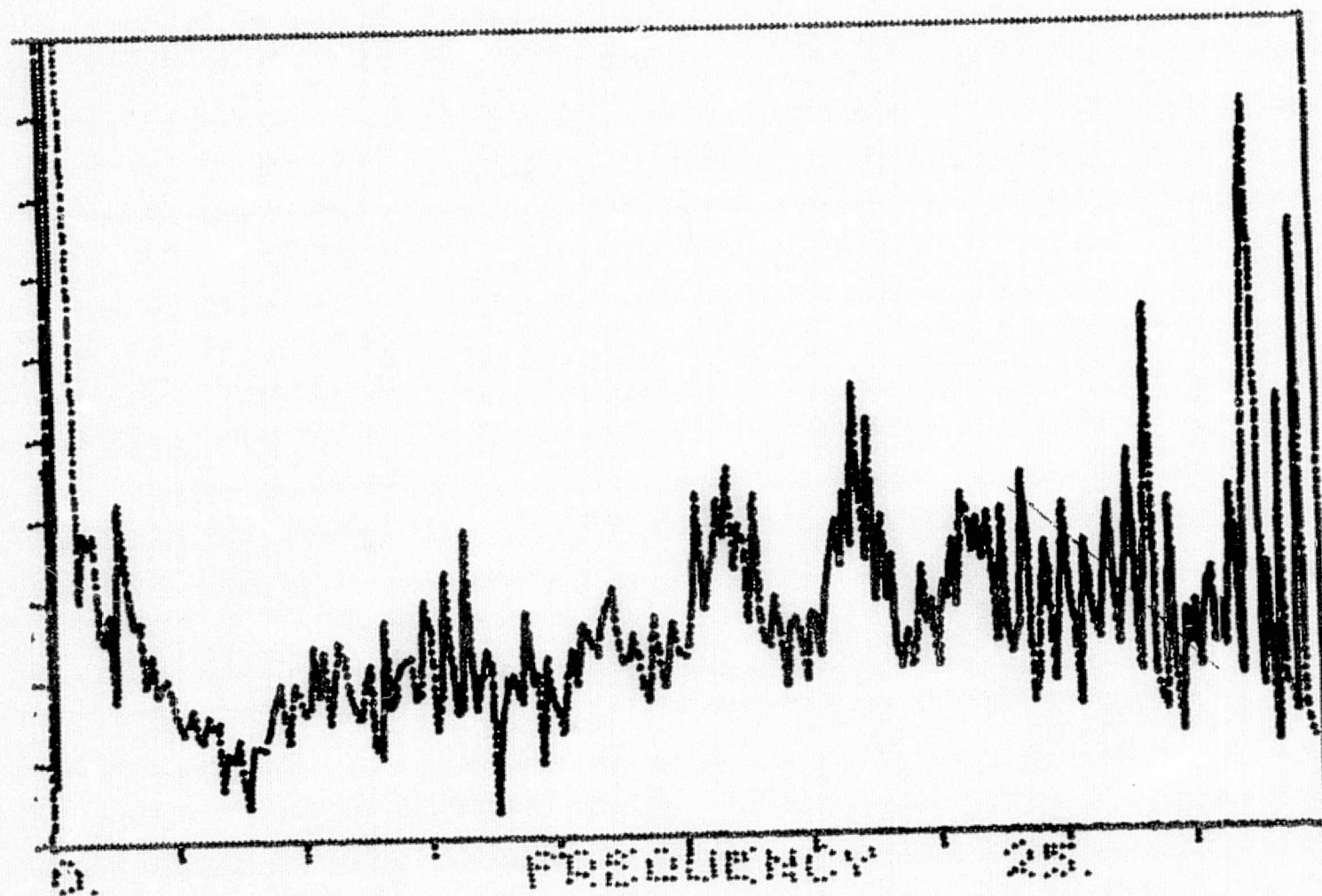
COMPLEX

SIZE= 355

2.

MAGN

0.



COMPLEX

SIZE = 256

Q.

FROM

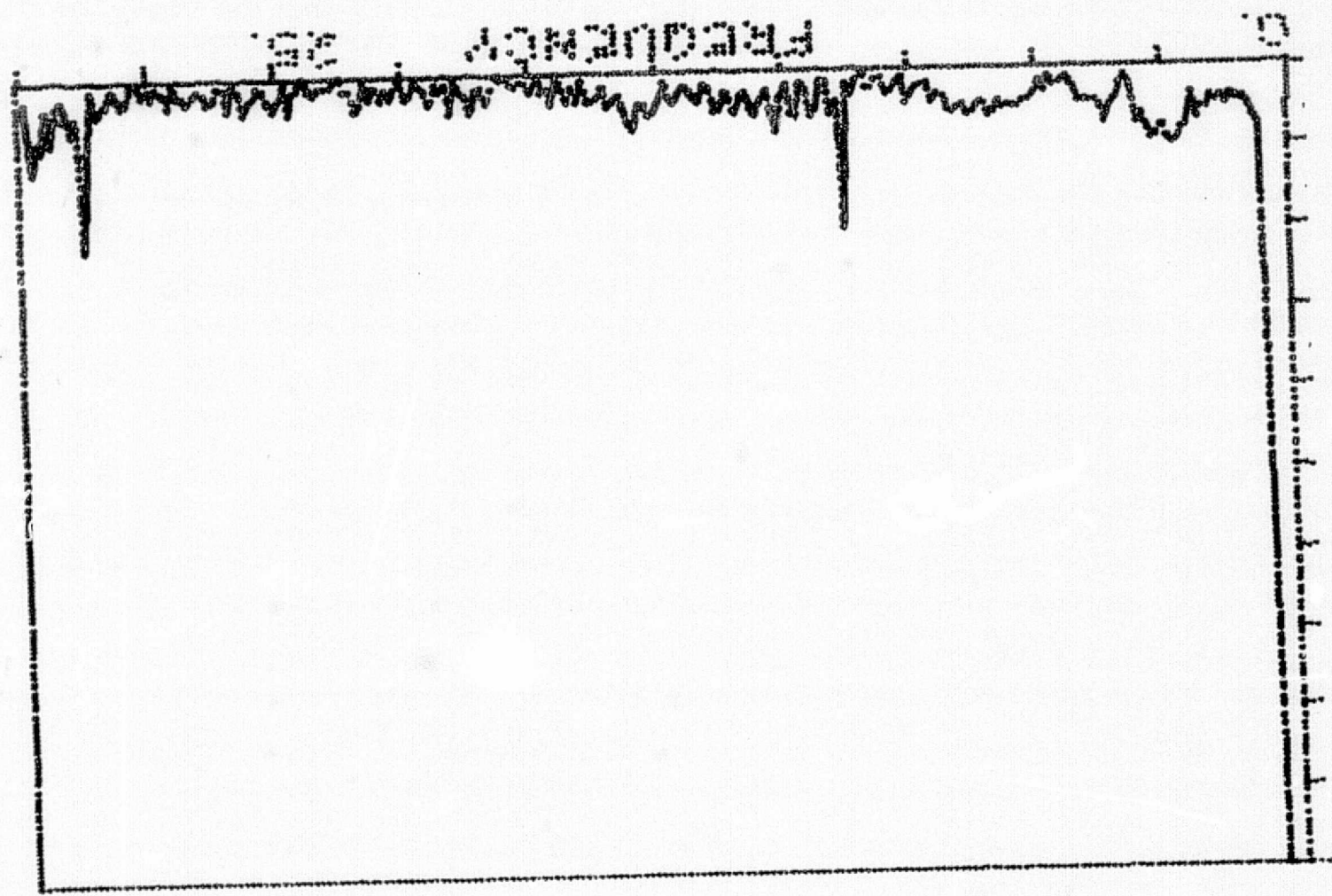
5.

DVI/FL1

COMPLEX SIZE = 256

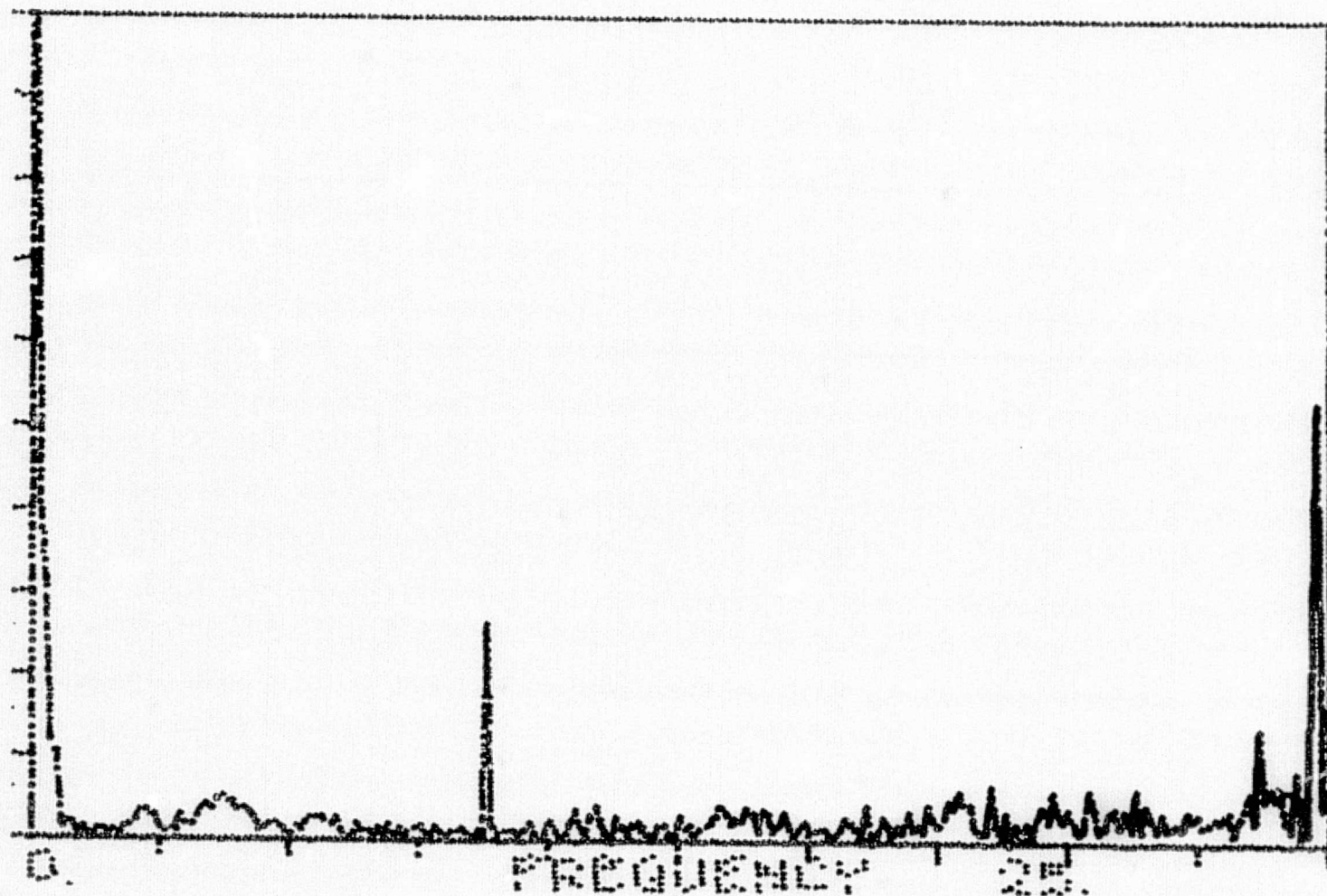
FREQUENCY

35.



. 5

mag



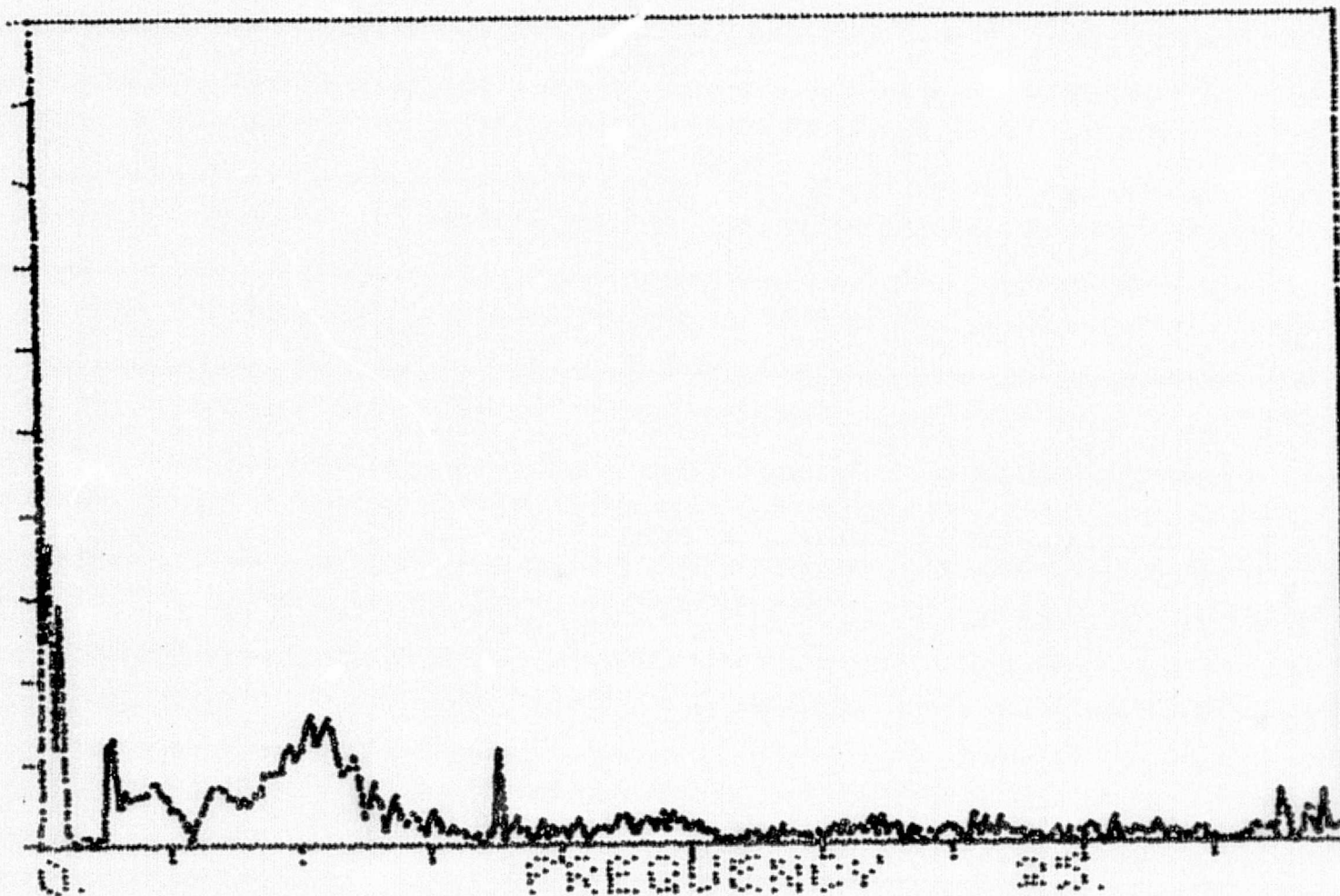
COMPLEX

SIZE= 256

B

NRGN

0.



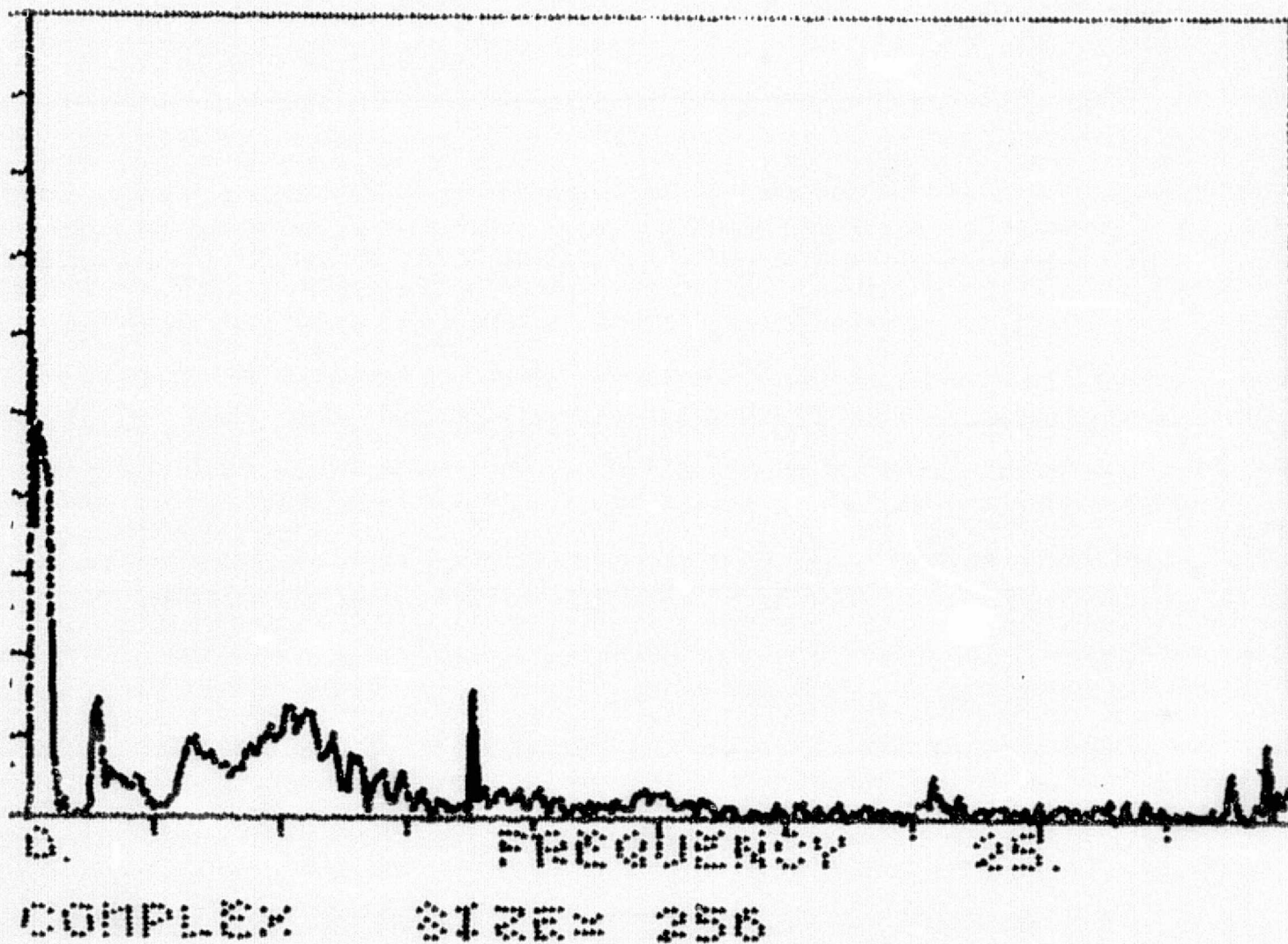
COMPLEX

SIZE= 256

DV3/FL1

5
MAGN

0.

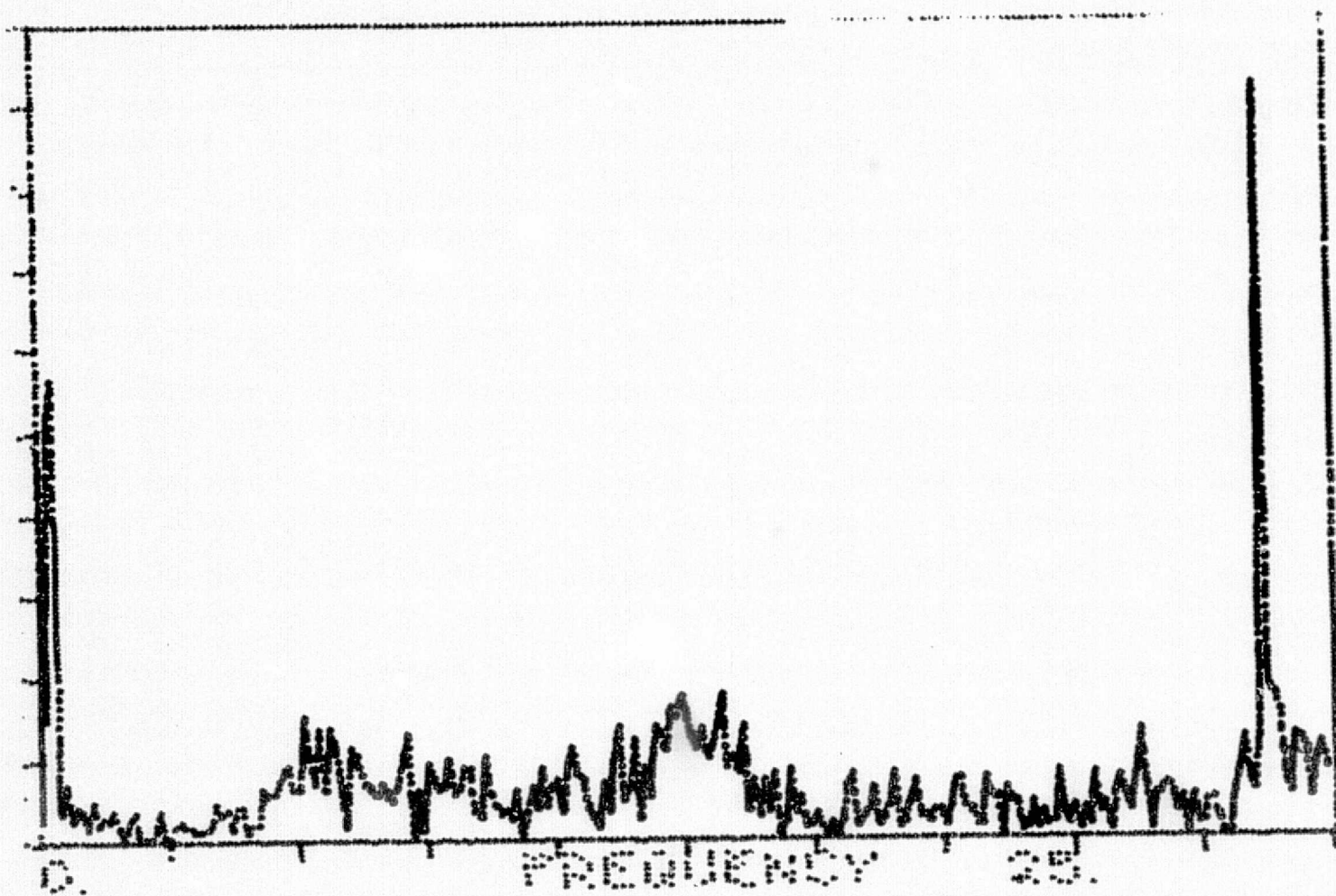


DV4/FL1

Q.

MAEN

Q.



COMPLEX

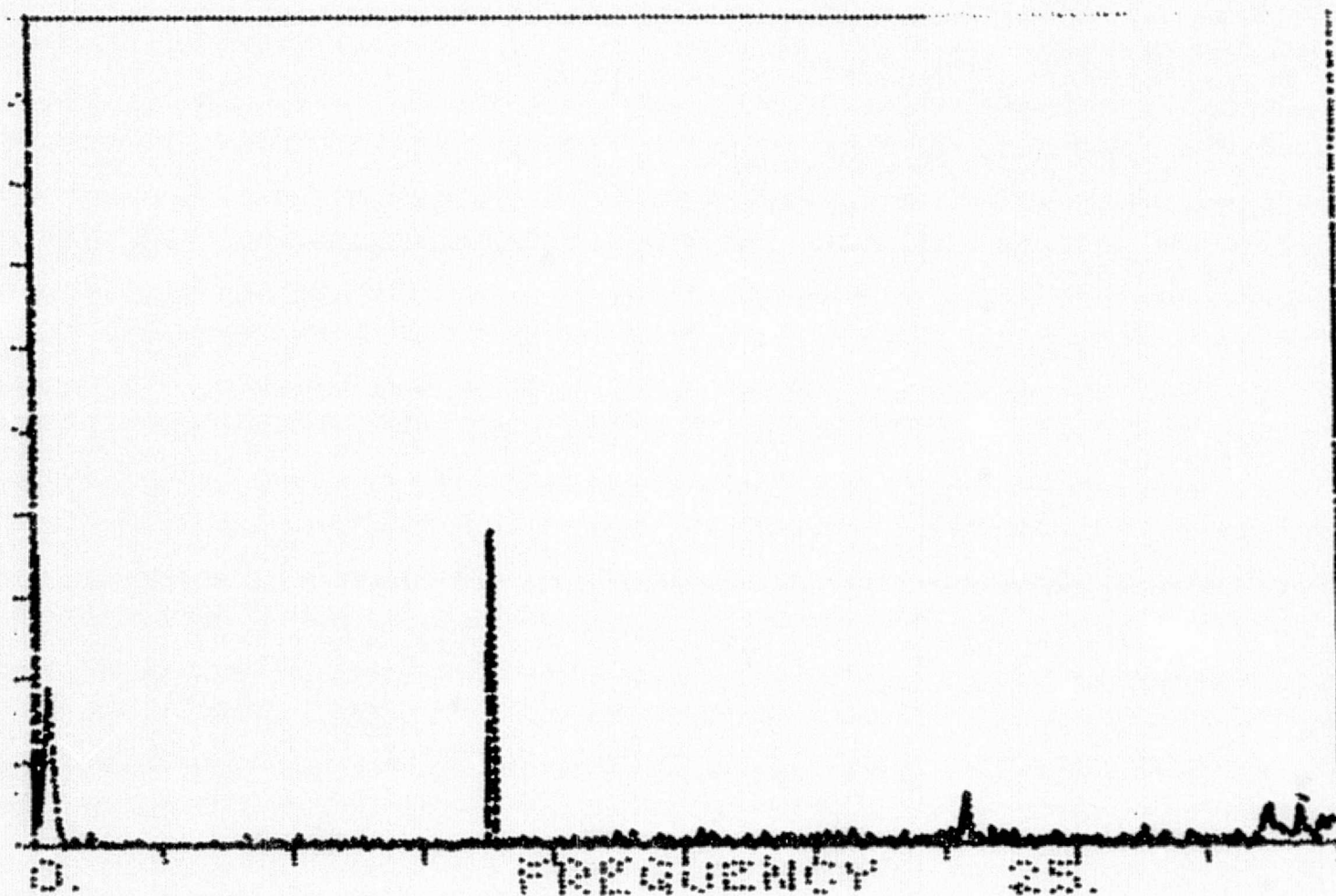
SIZE= 355

AV1/FL1

. 5

MAGN

0.



COMPLEN

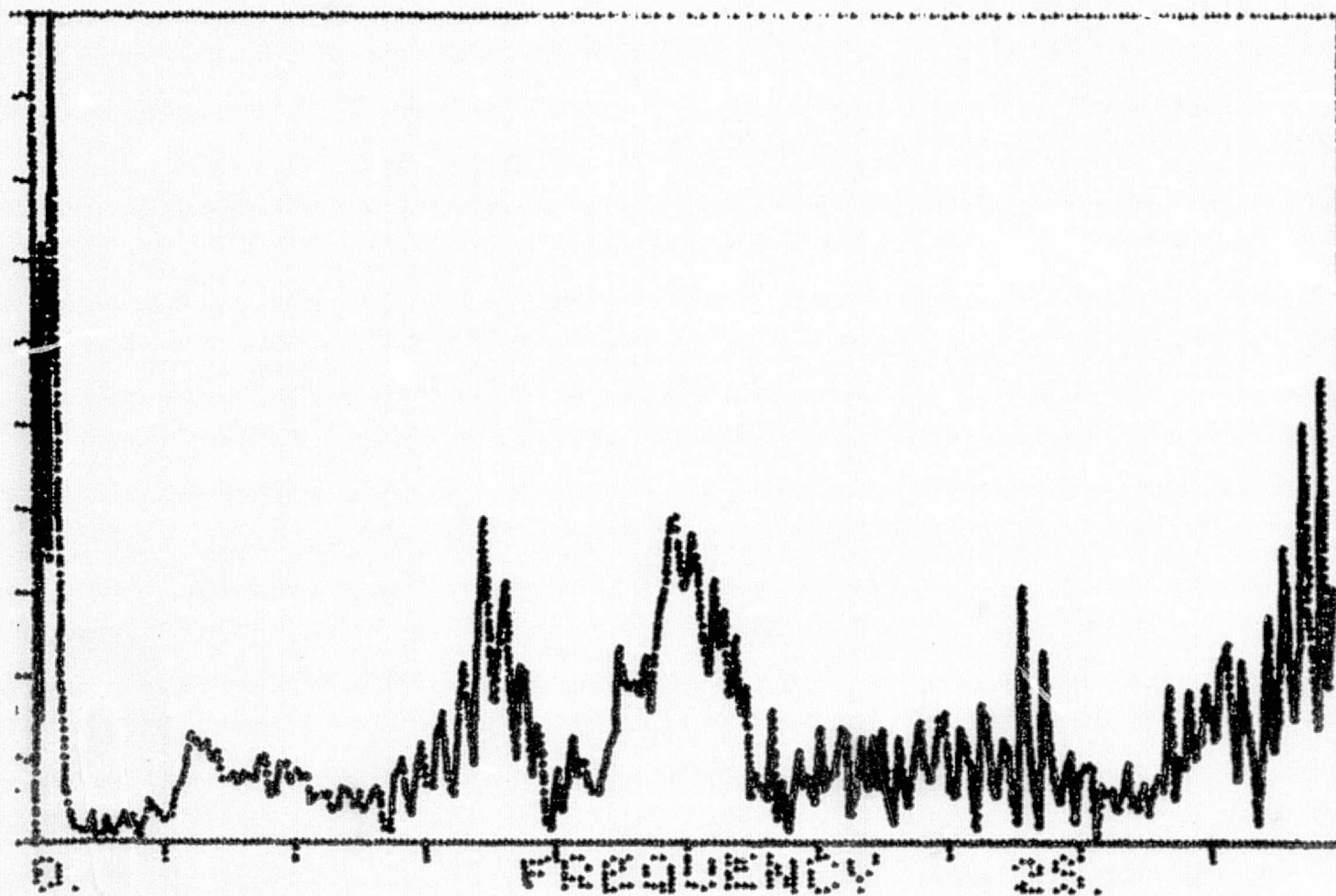
SIZE= 256

AV2/FL1

1.

MACN

0.

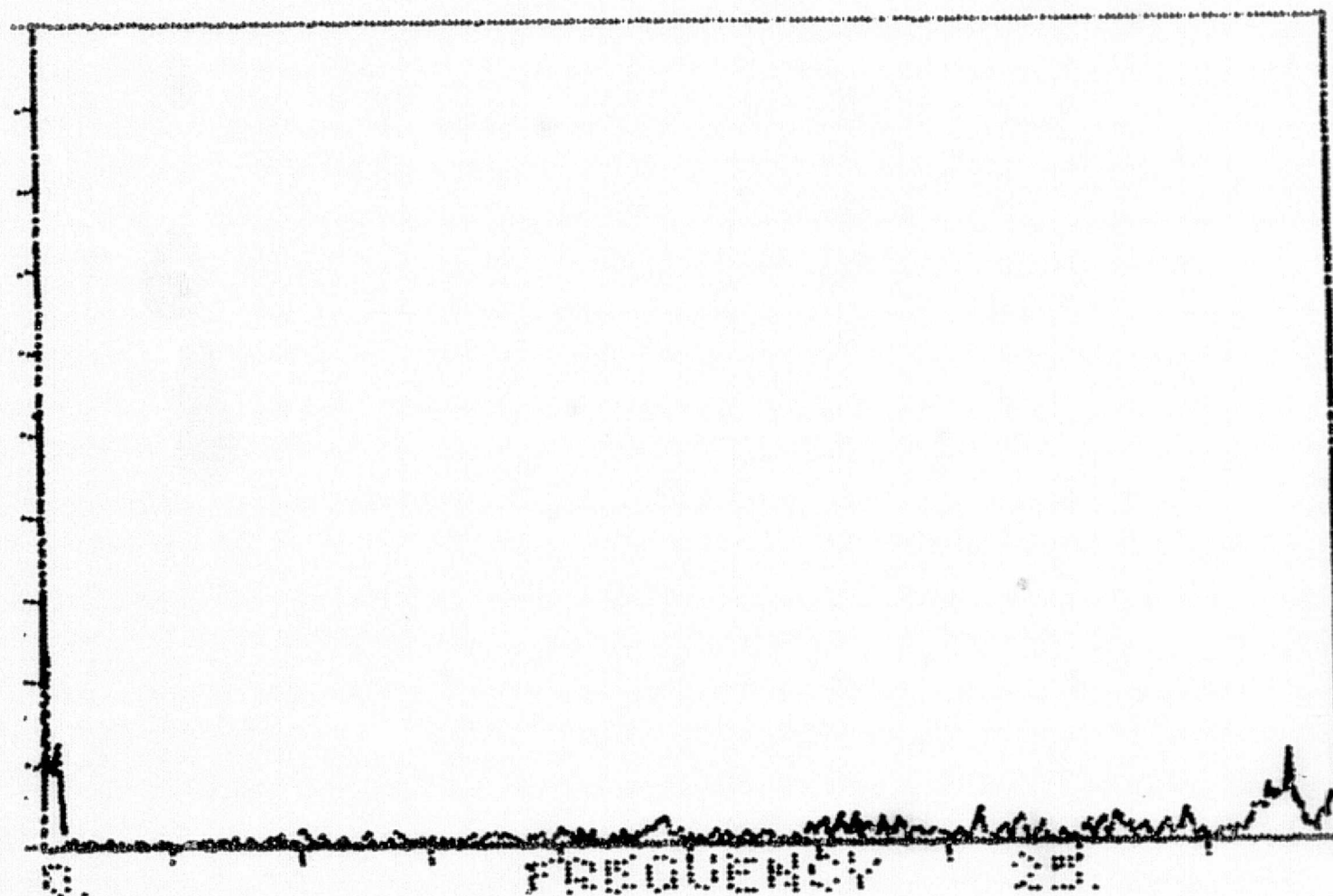


COMPLEX

SIZE= 256

3
HACK

0.



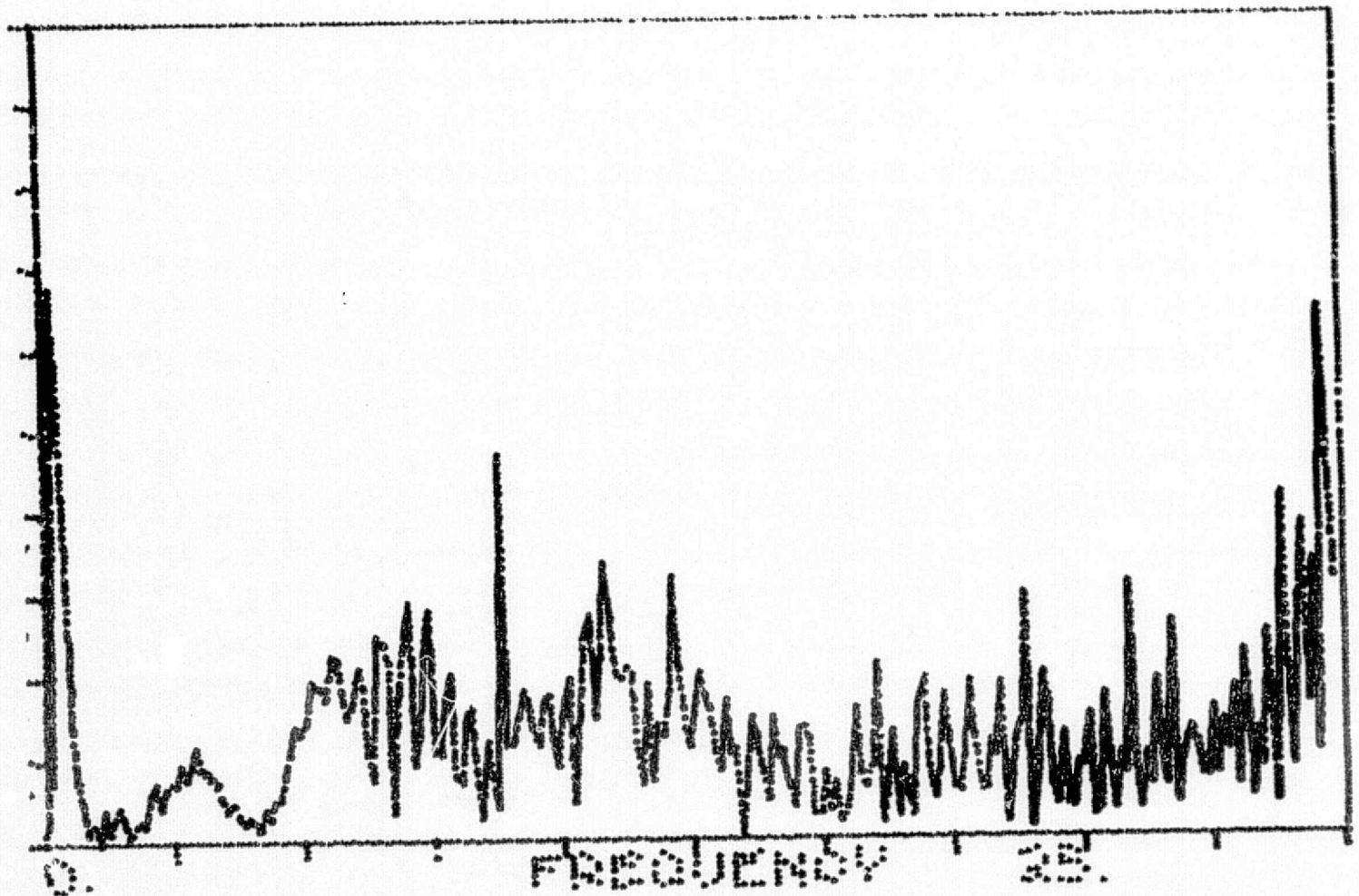
COMPLEX SIZE= 256

AV4/FL1

5

MAGN

0.



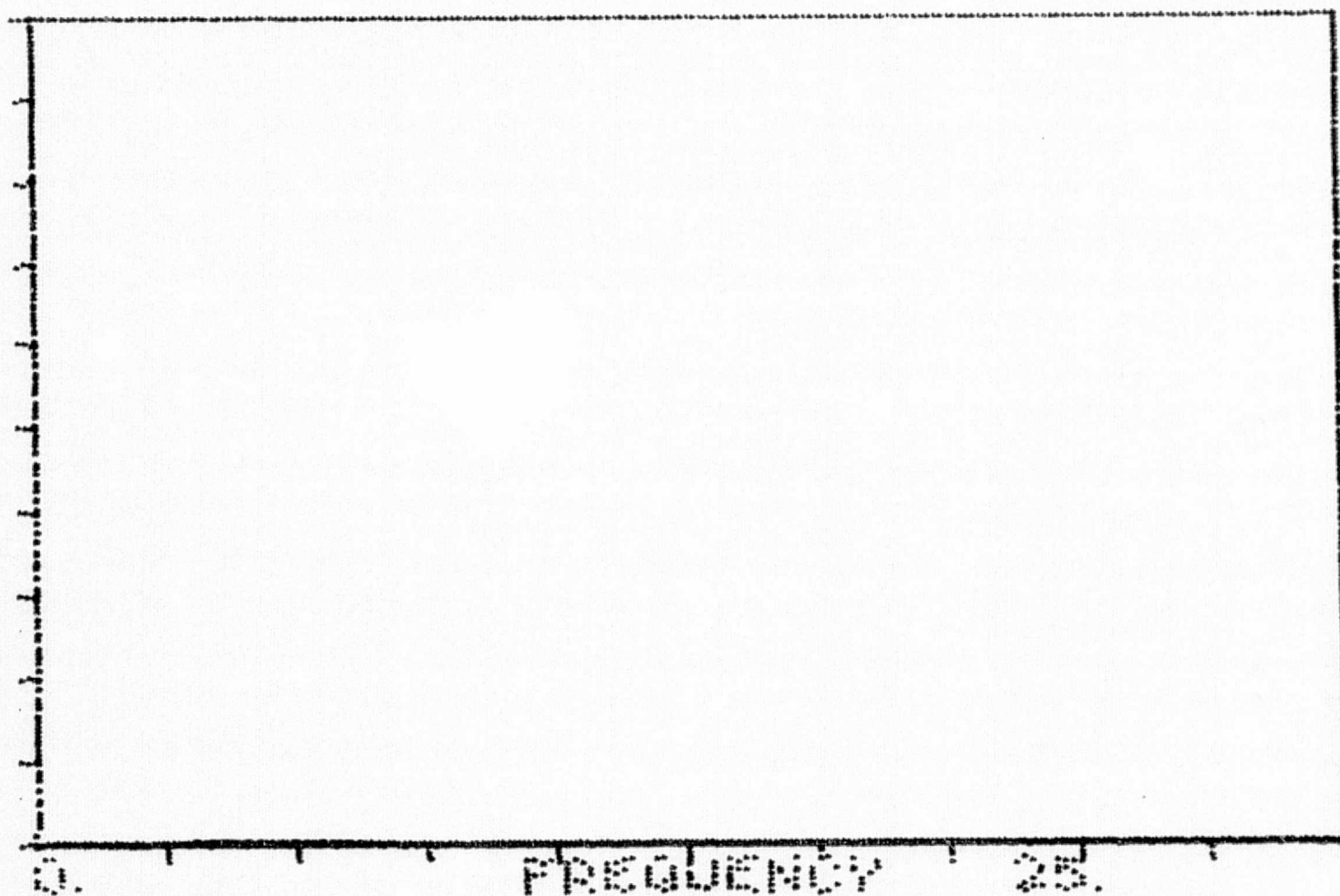
COMPLEX

SIZE= 256

XXXX

FROM

0.



COMPLEX

SIZE= 256

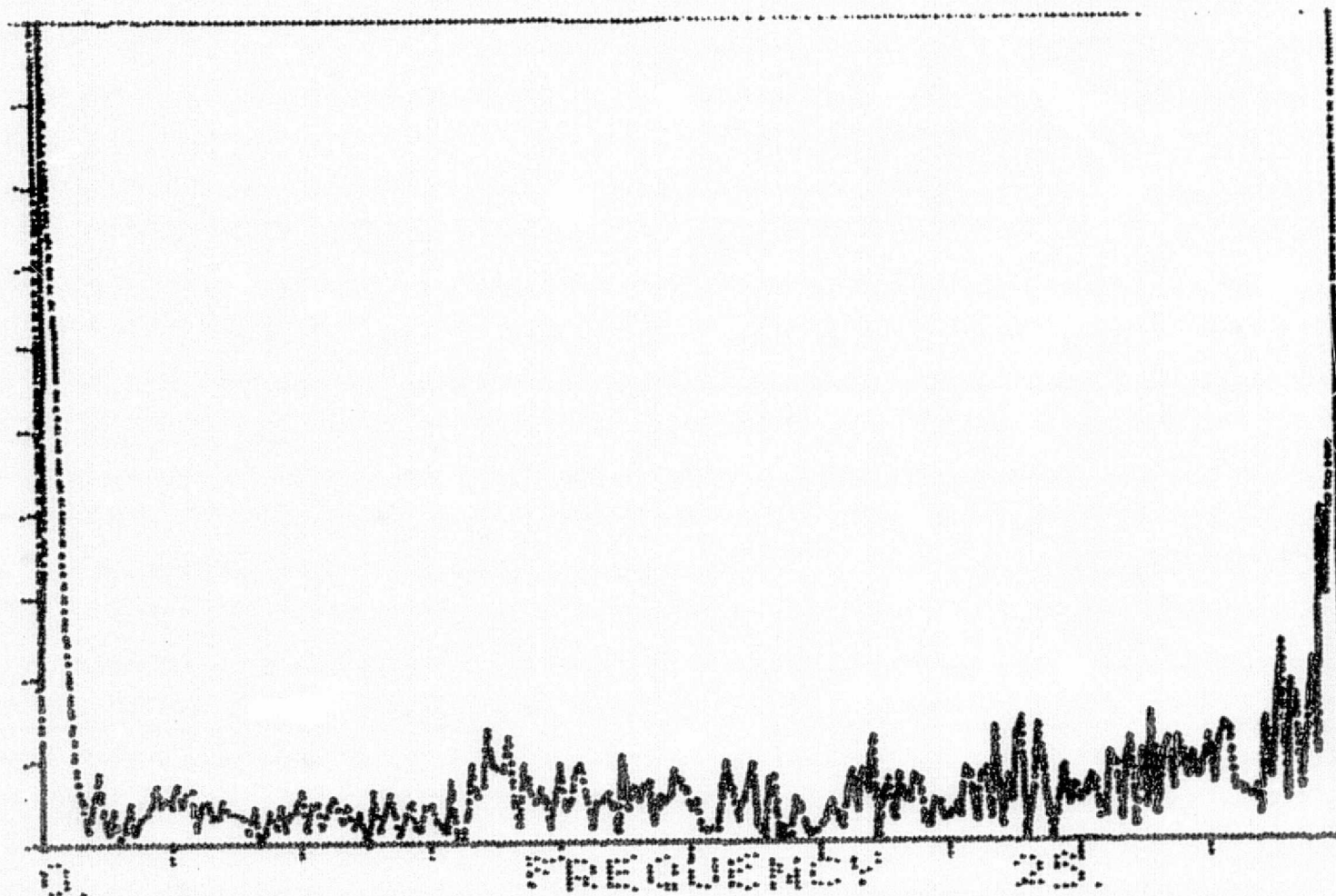
FREQUENCY

25.

8.

MAPK

0.



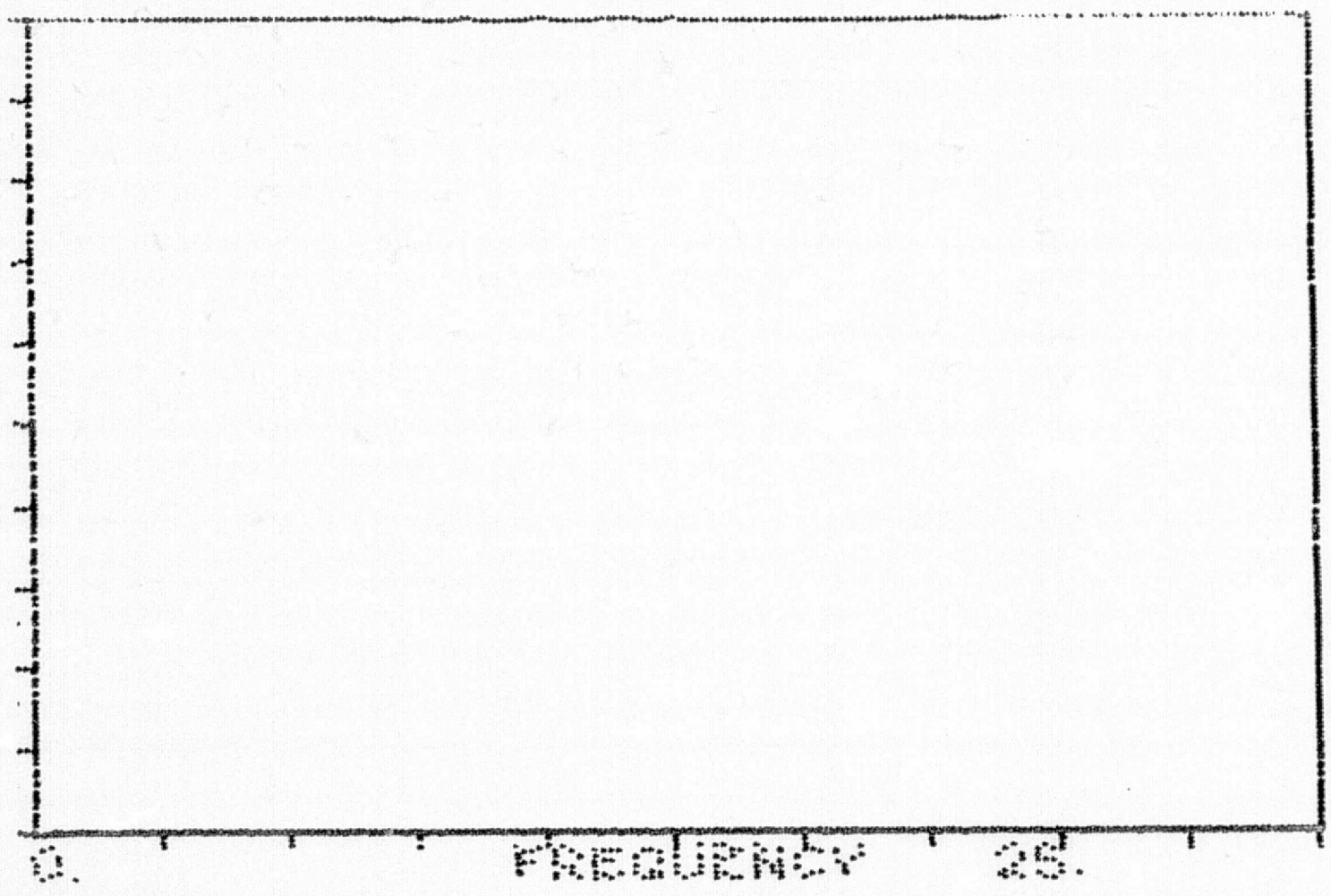
COMPLEX

SIZE= 256

AL1/FL1

MAGN

0.



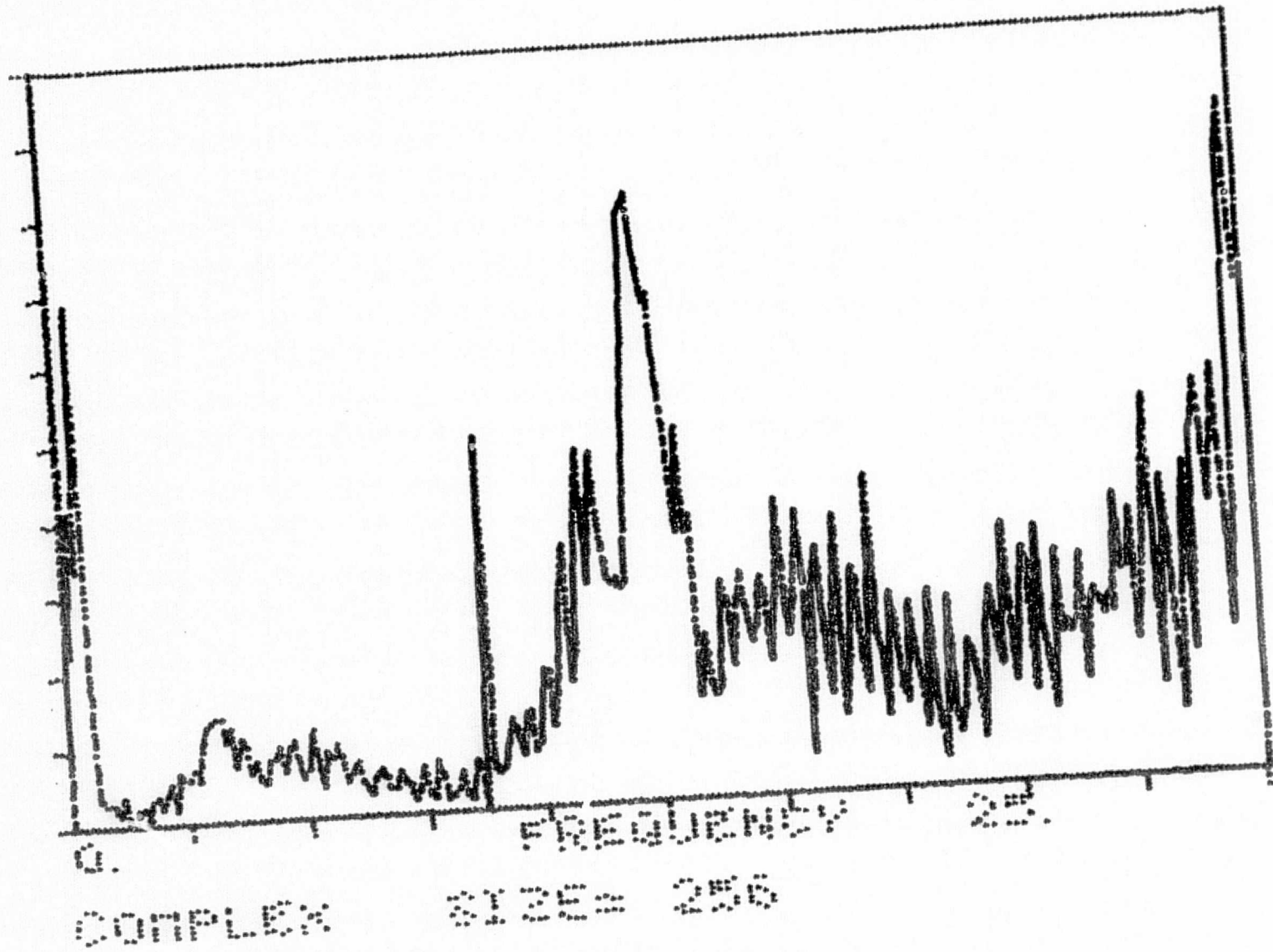
COMPLEX

SIZE= 256

AL2/FL1

5
MAGN

0.

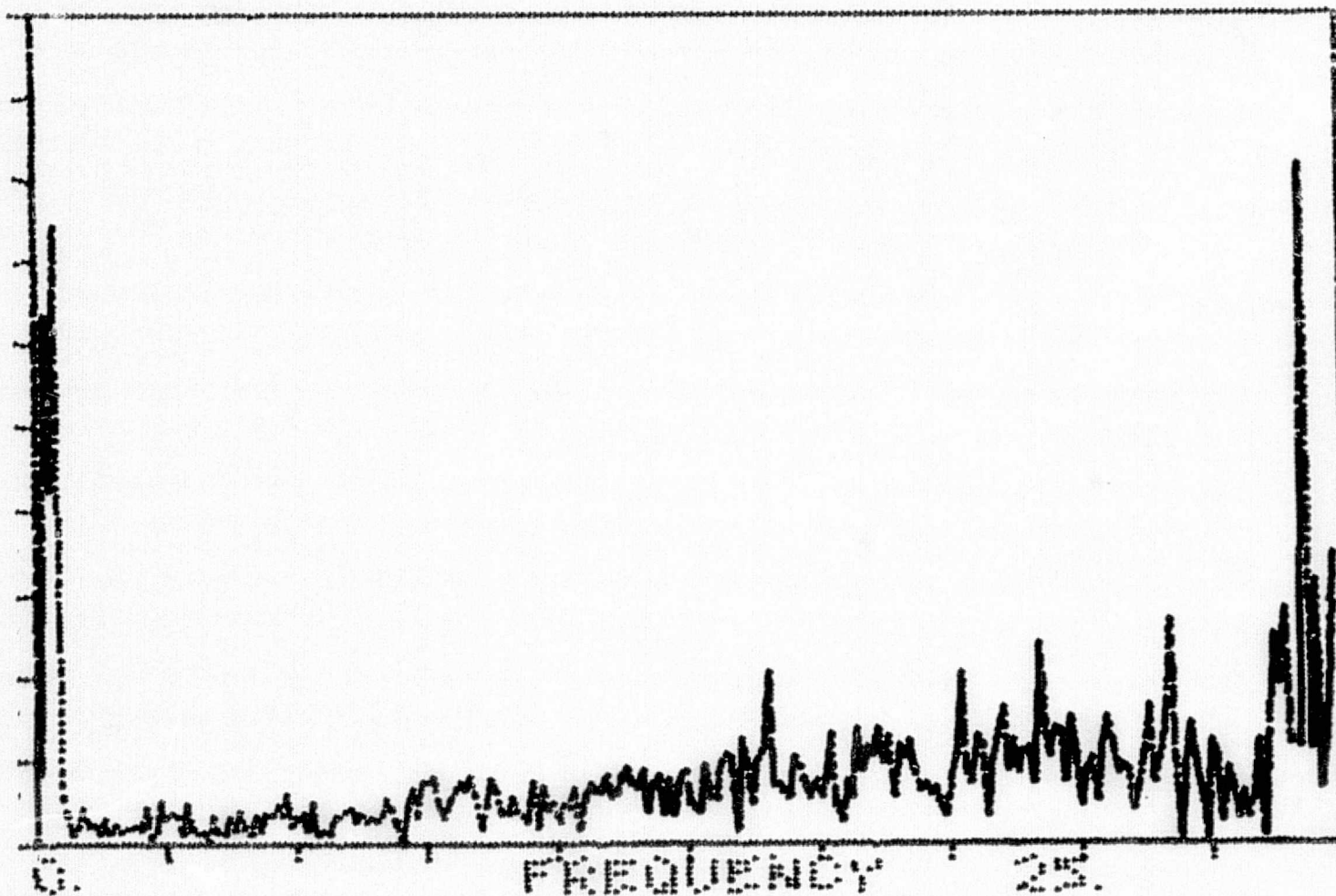


AL3/FL1

20.

MAGN

0.



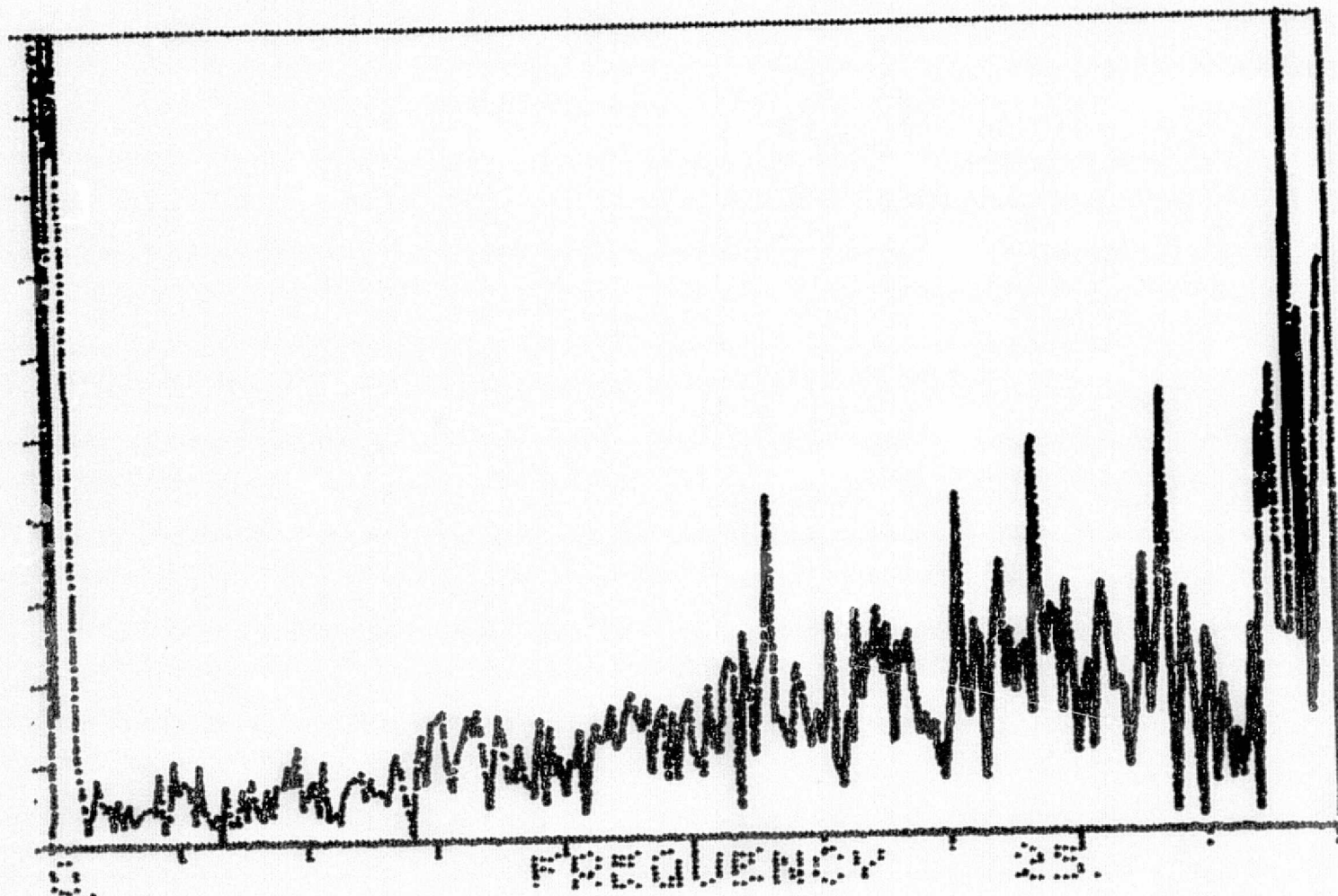
COMPLEX

SIZE= 256

10.

1964

0.



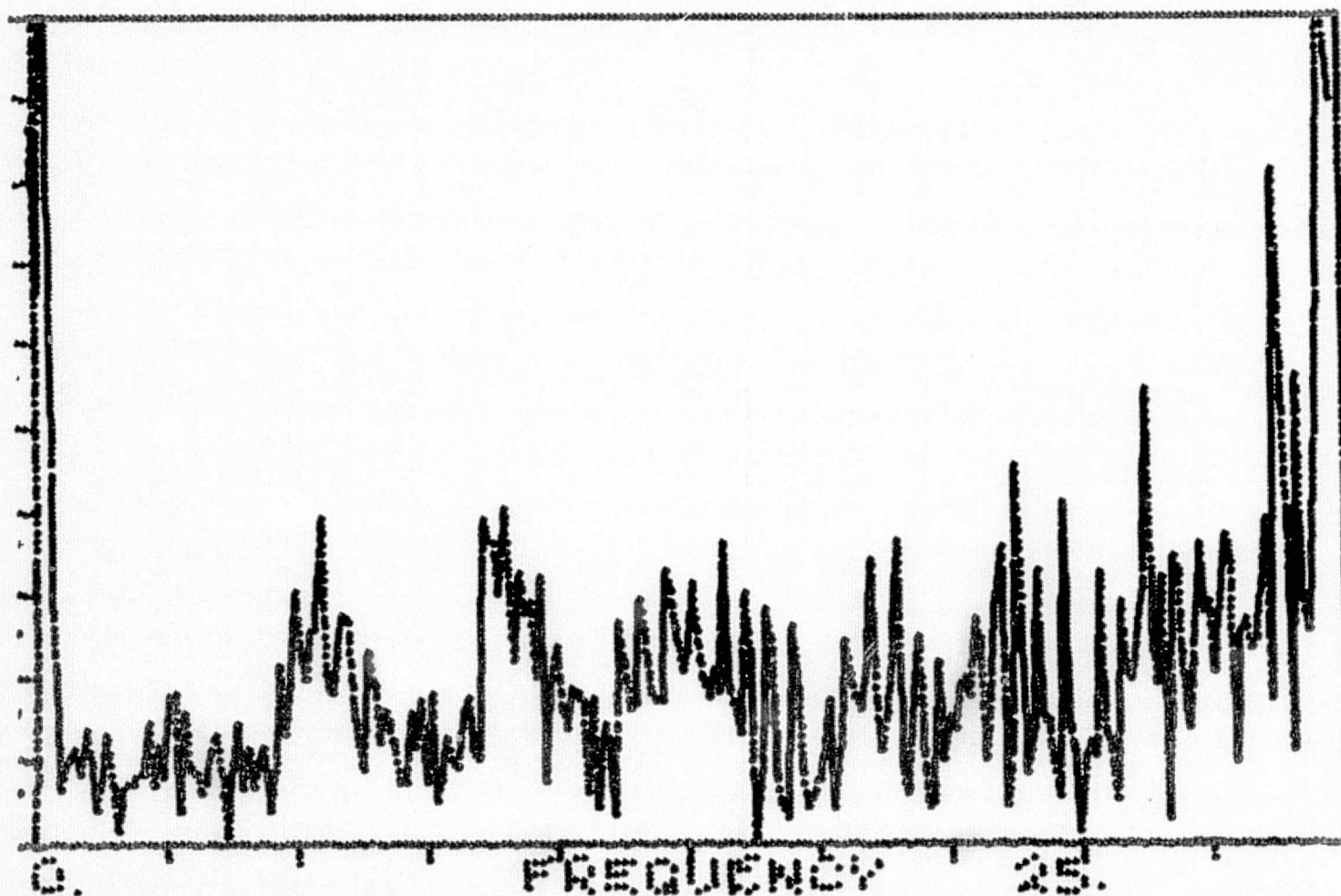
COMPLEX

SIZE= 256

1.

MAGN

0.



COMPLEX

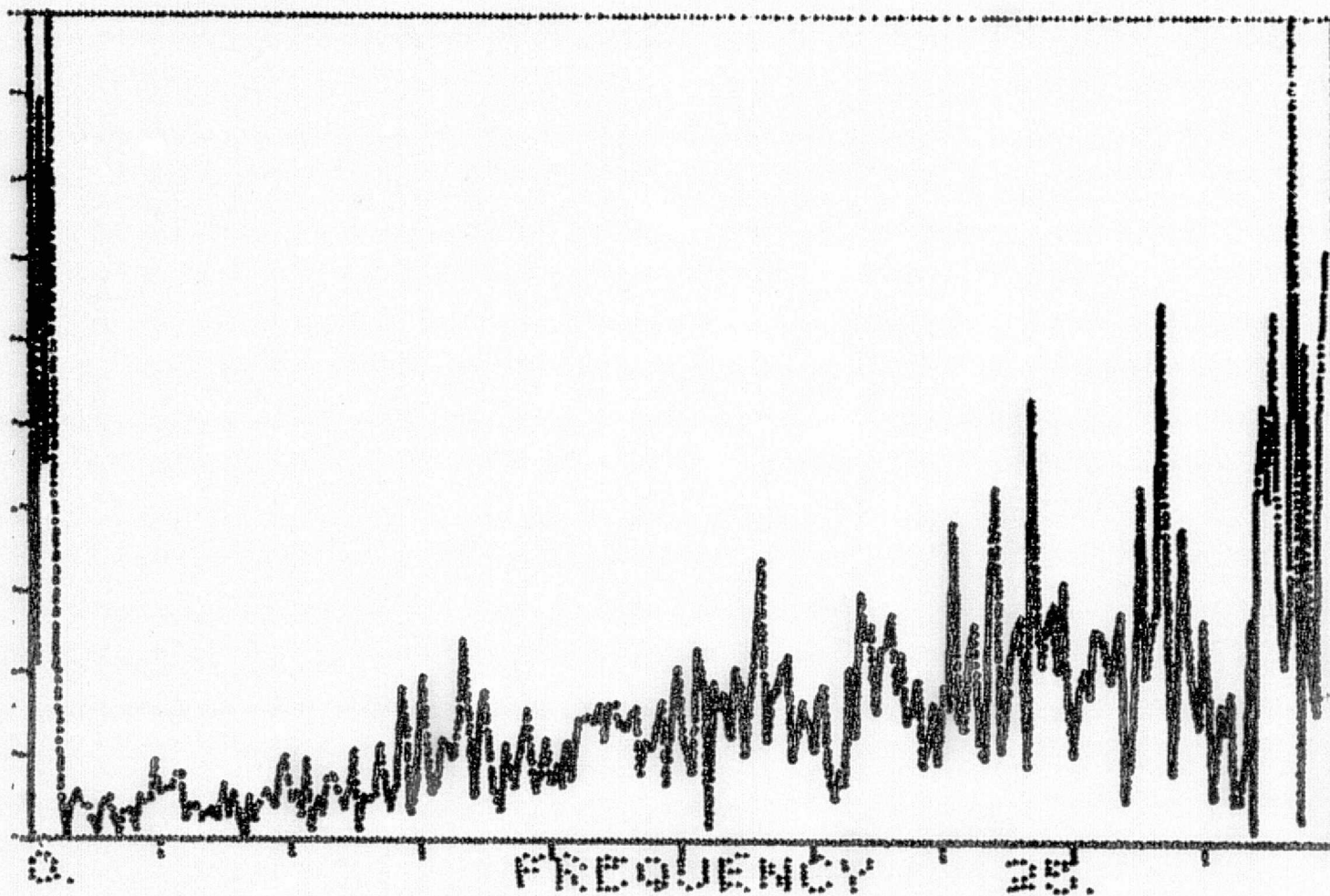
SIZE= 256

AL7/FL1

30.

mag

0.



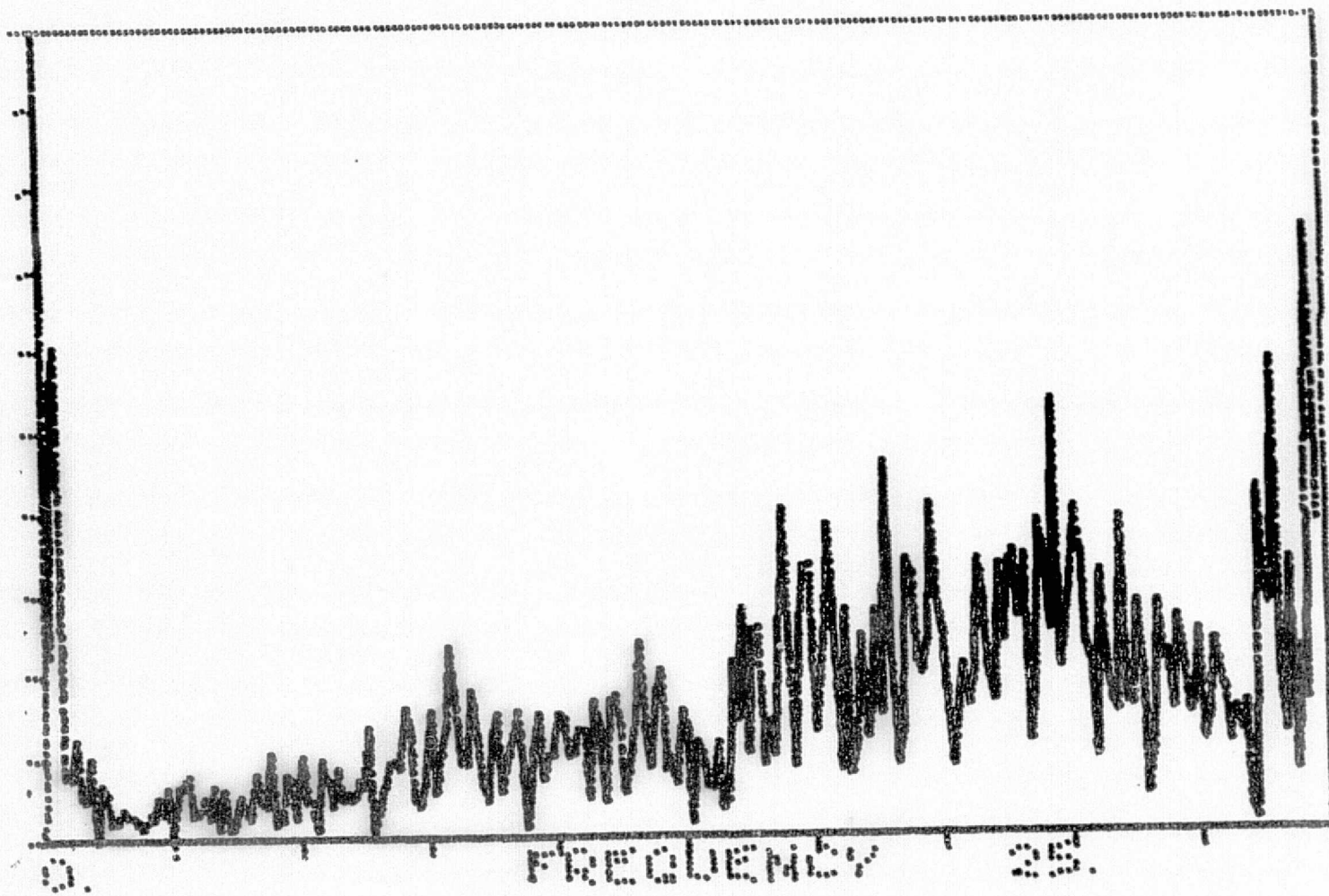
COMPLEX

SIZE= 256

30.

mag

0.



COMPLEX

SIZE= 256

AL4/FL1

20.

NRGM

0.

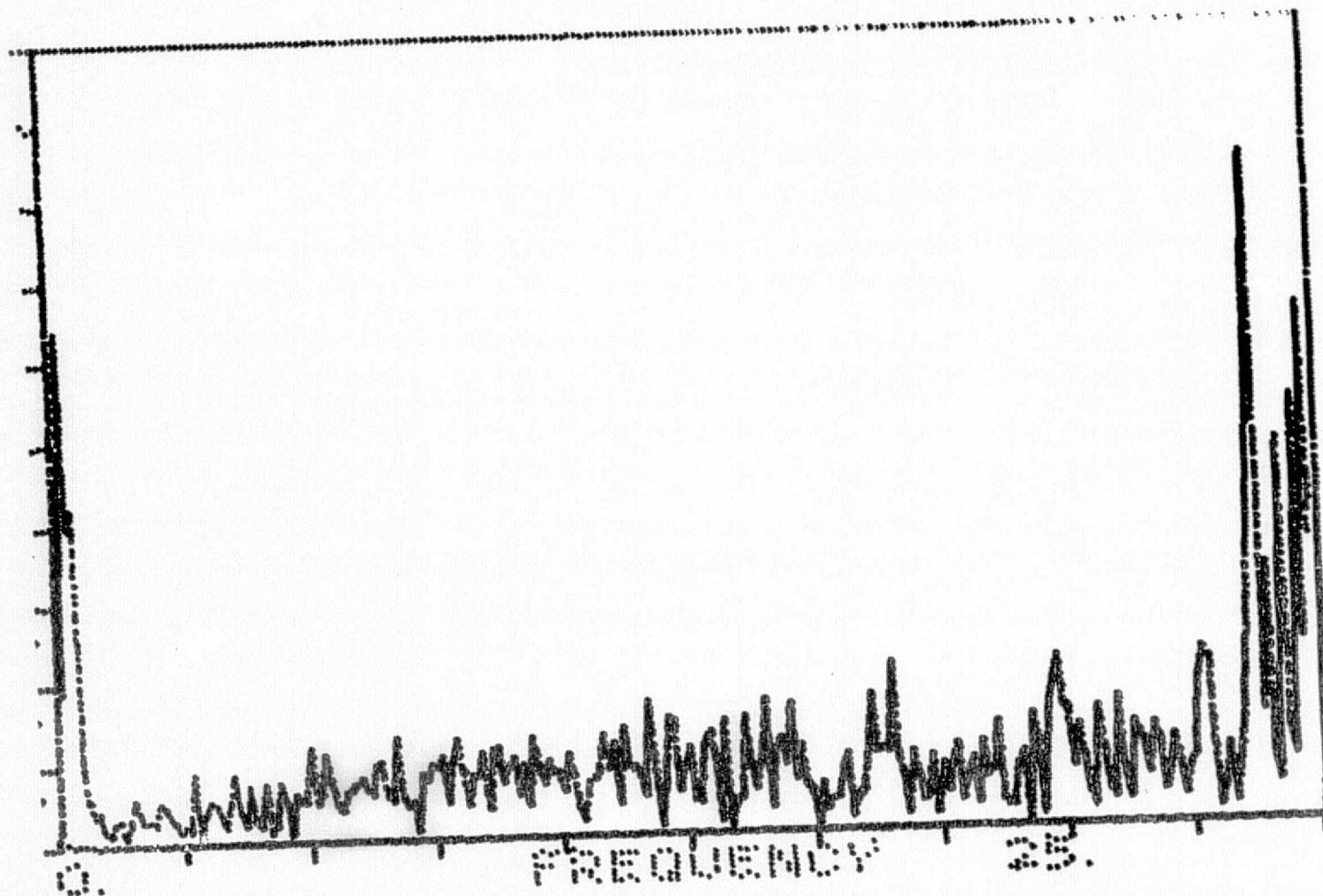
0.

COMPLEX

SIZE= 256

FREQUENCY

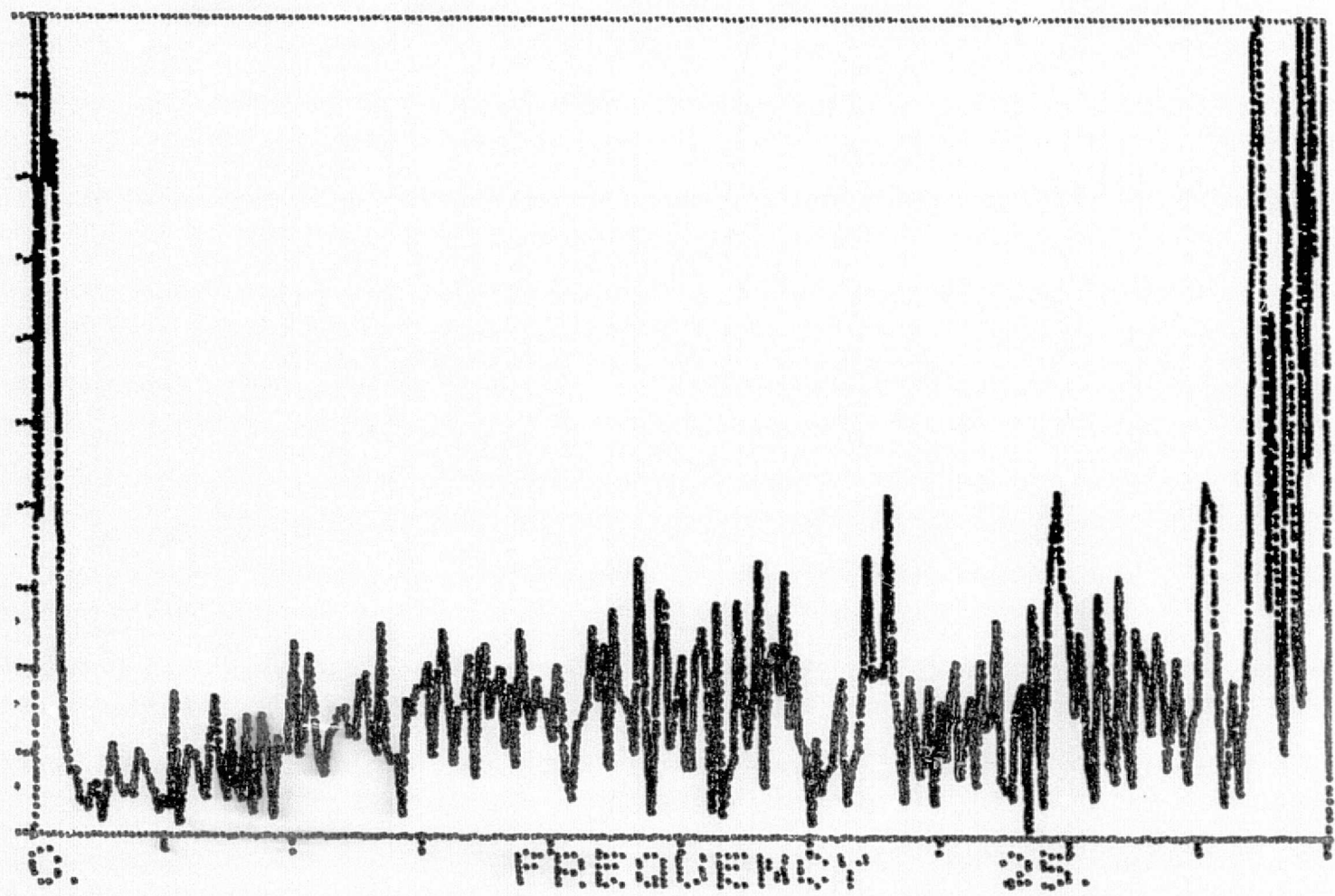
25.



10.

1100N

0.



0.

FREQUENCY

25.

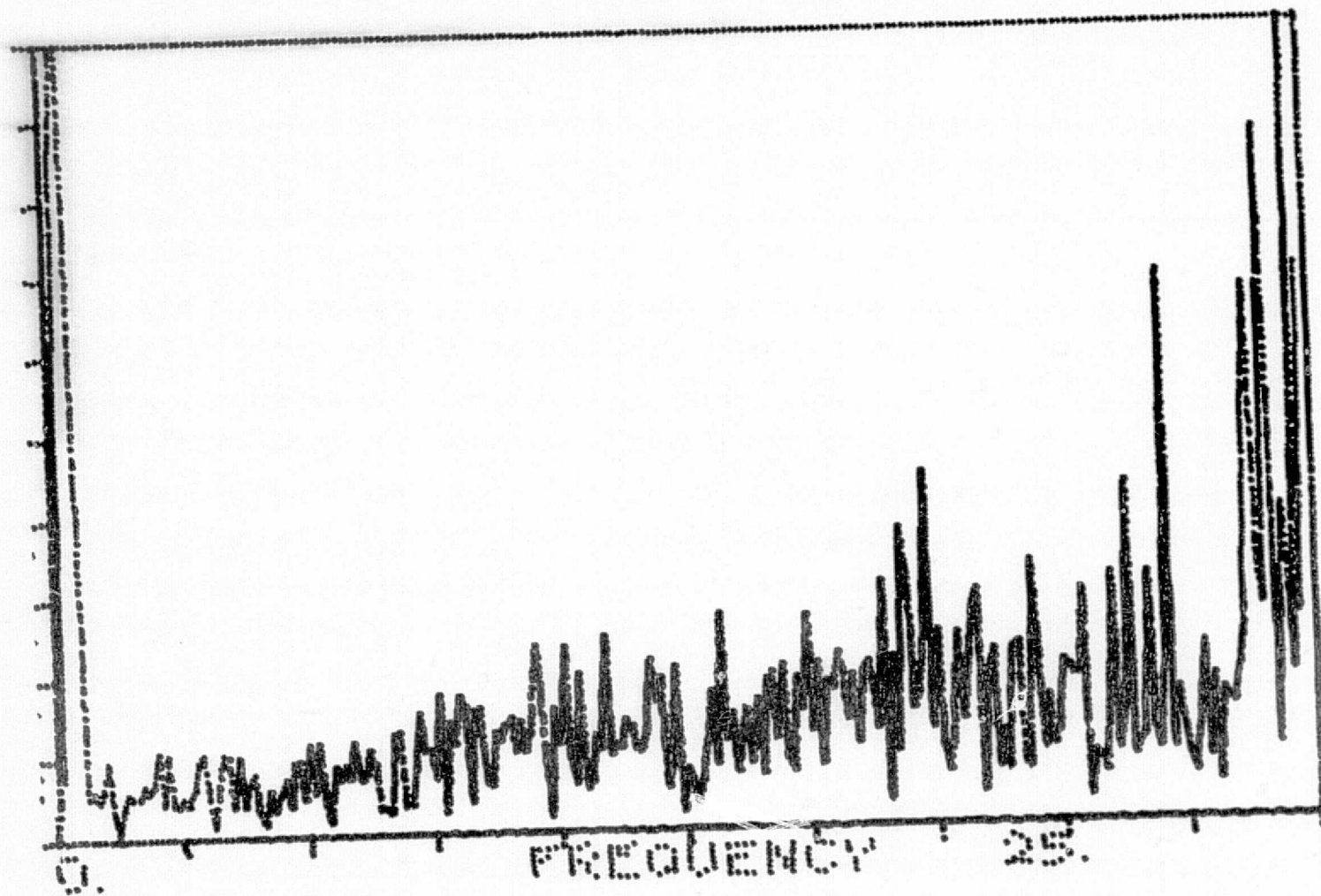
COMPLEX

SIZE= 256

30.

1140H

0.



COMPLEX

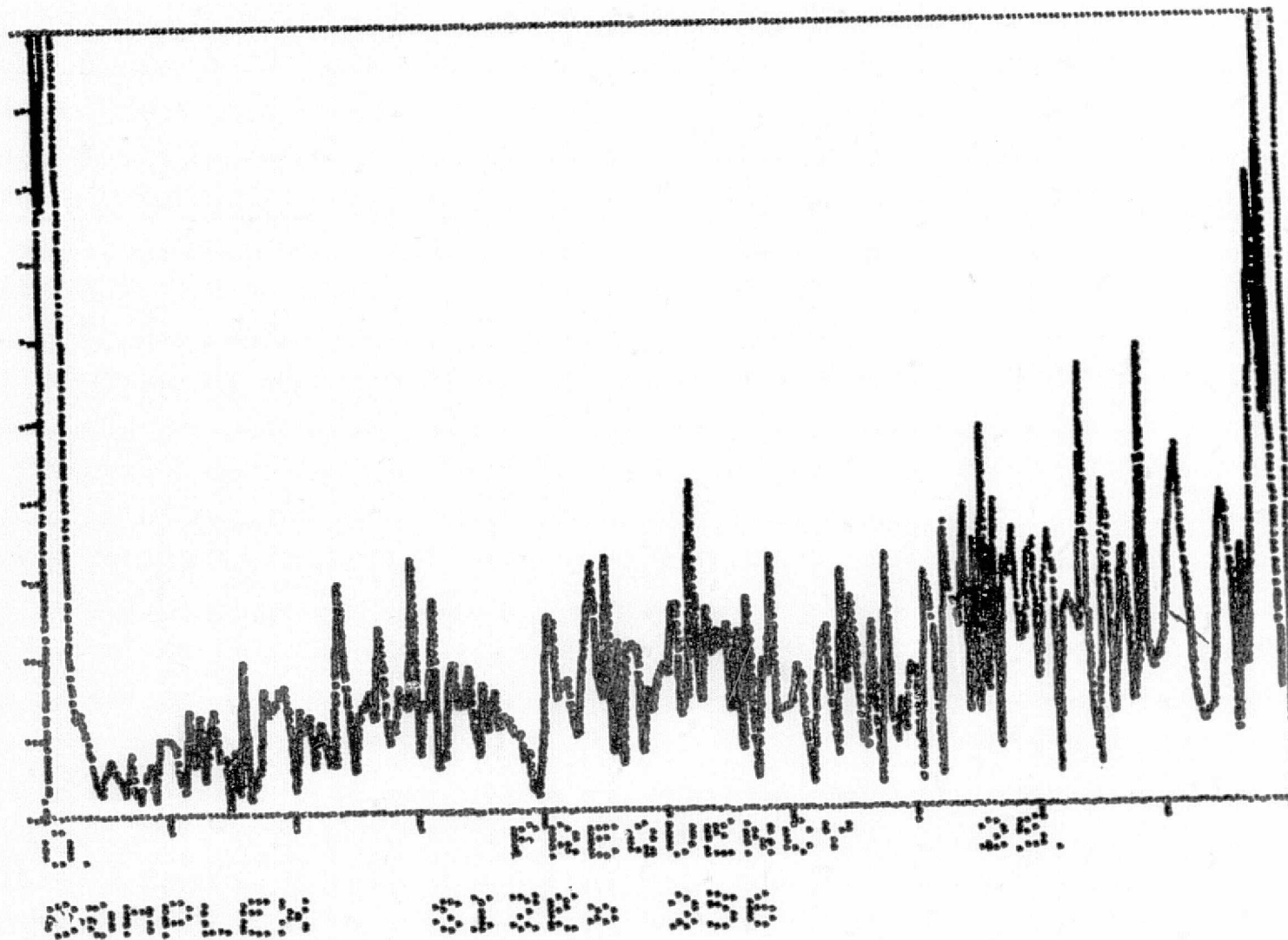
SIZE* 256

AL8/FL1

10.

MAGN

0.

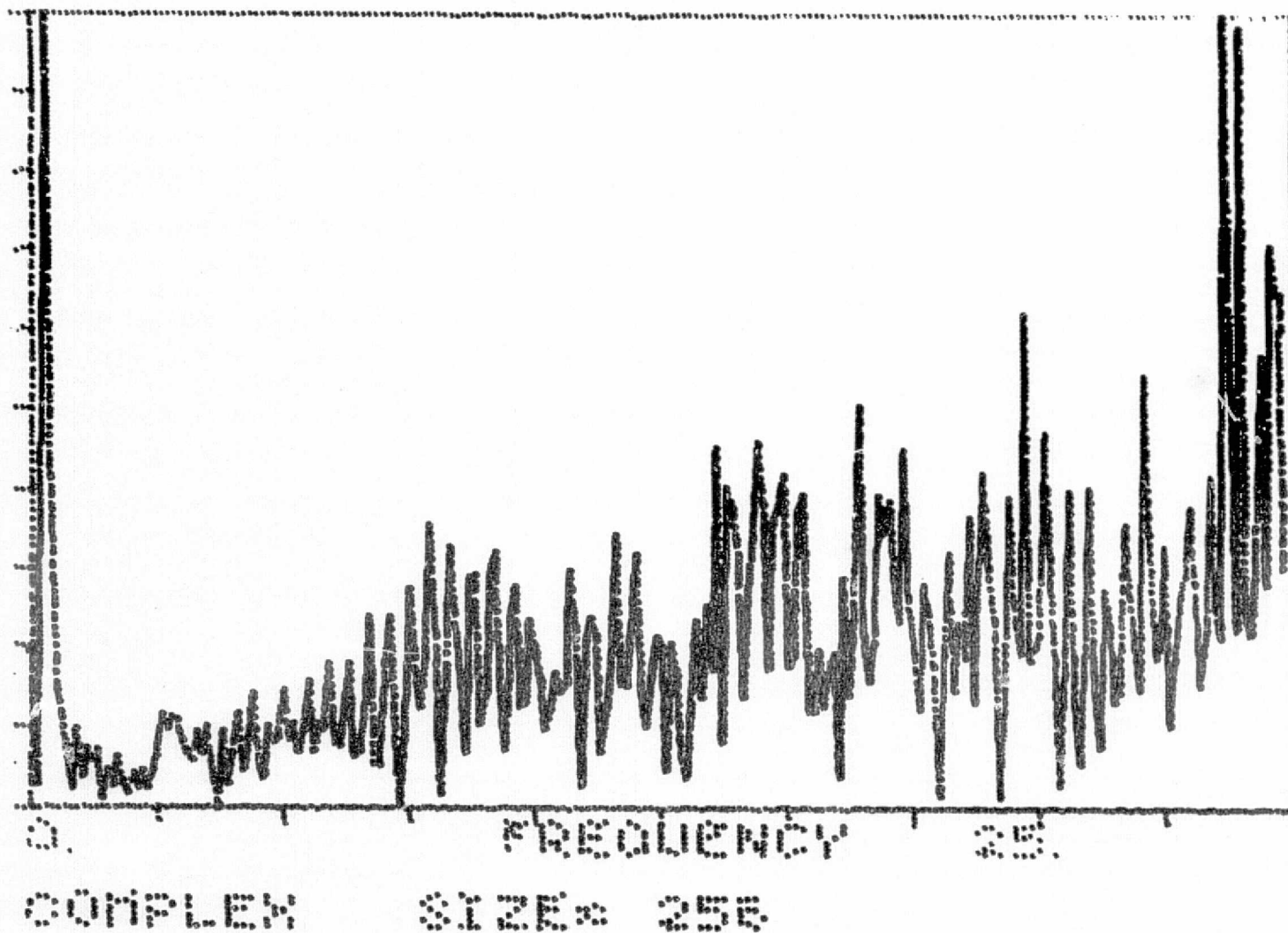


AL9/FL1

5.

1100N

0.

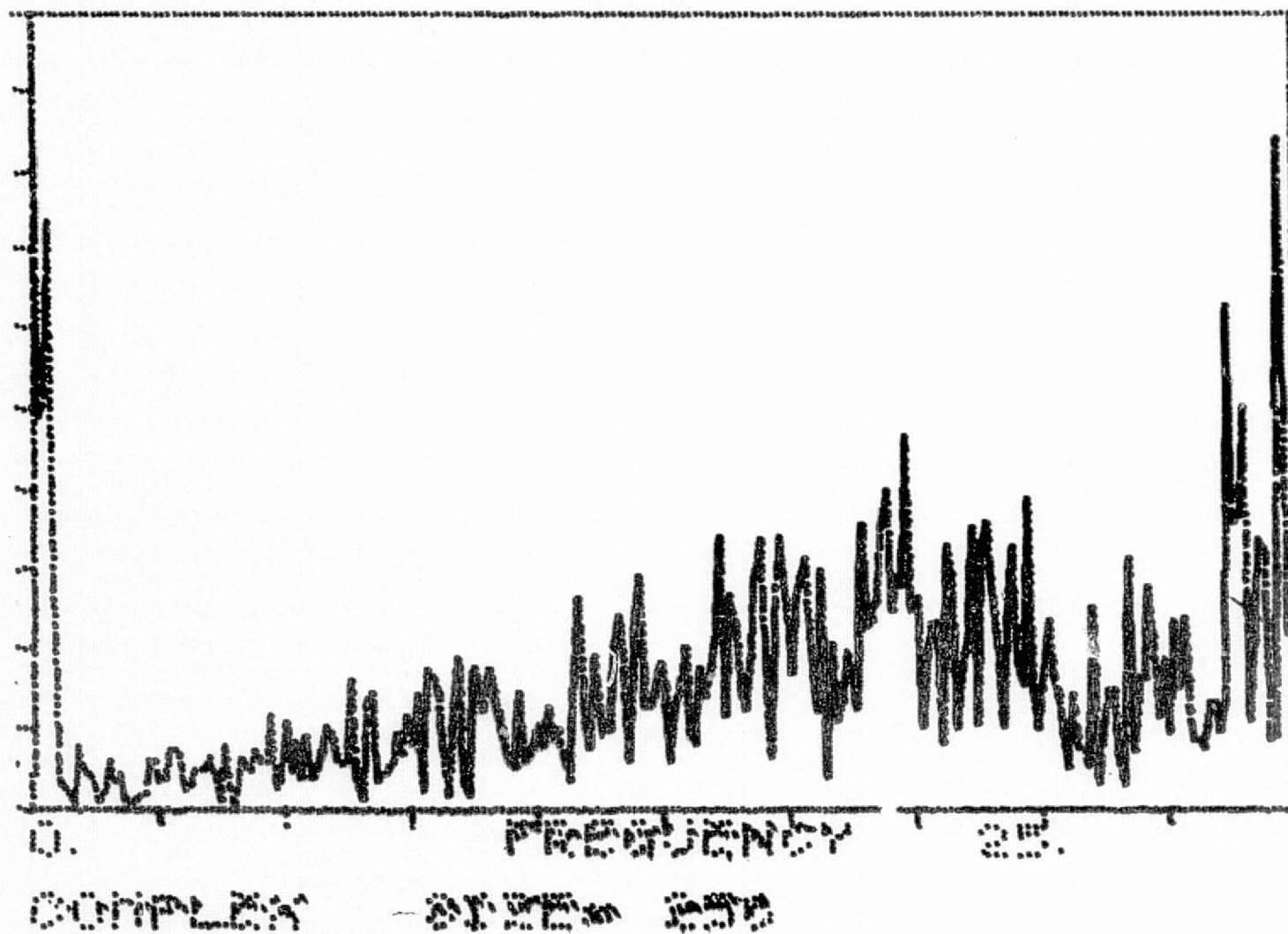


AL10/FL1

10.

MACH

0.

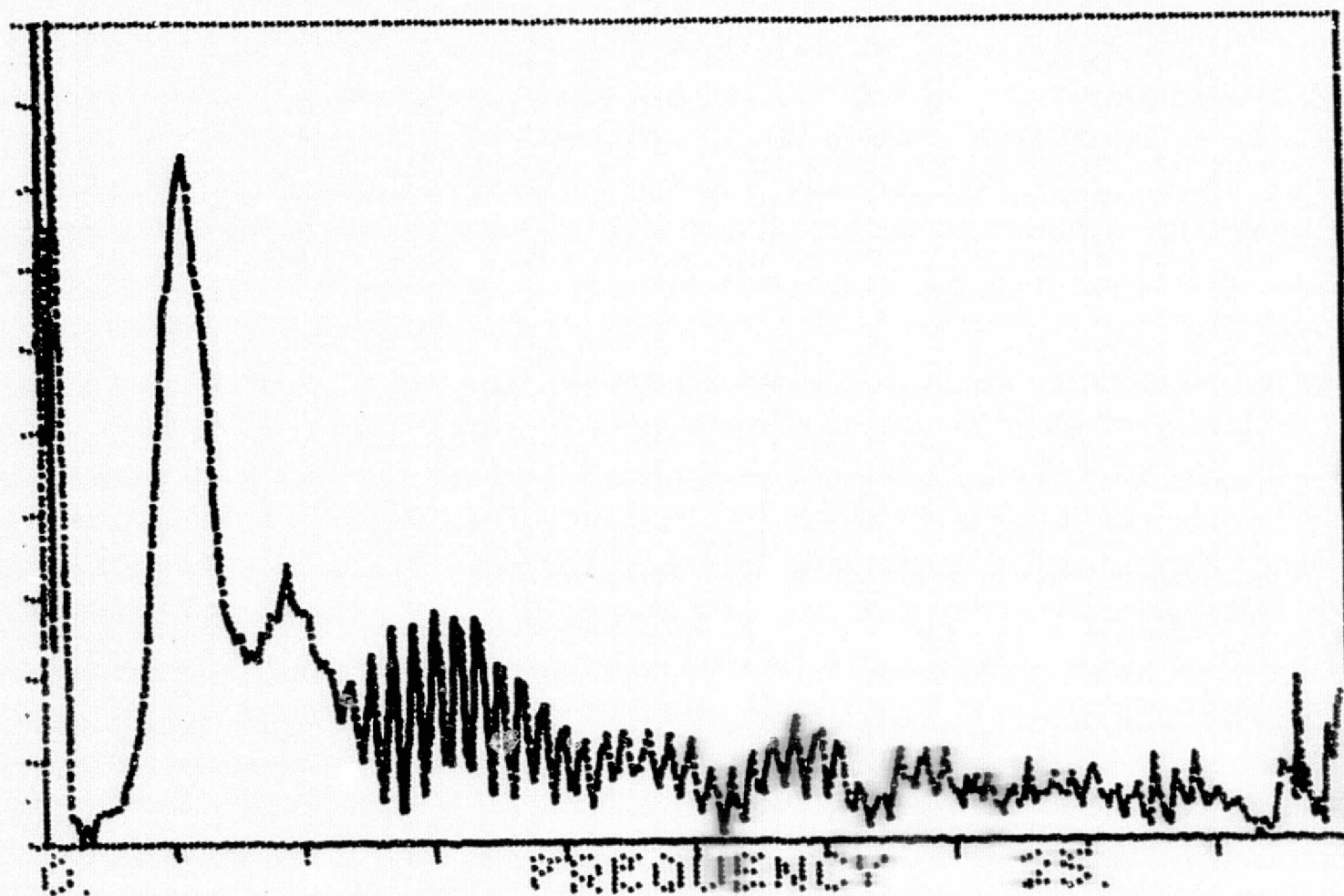


AL12/FL1

1.

MAON

0.



COMPLEX

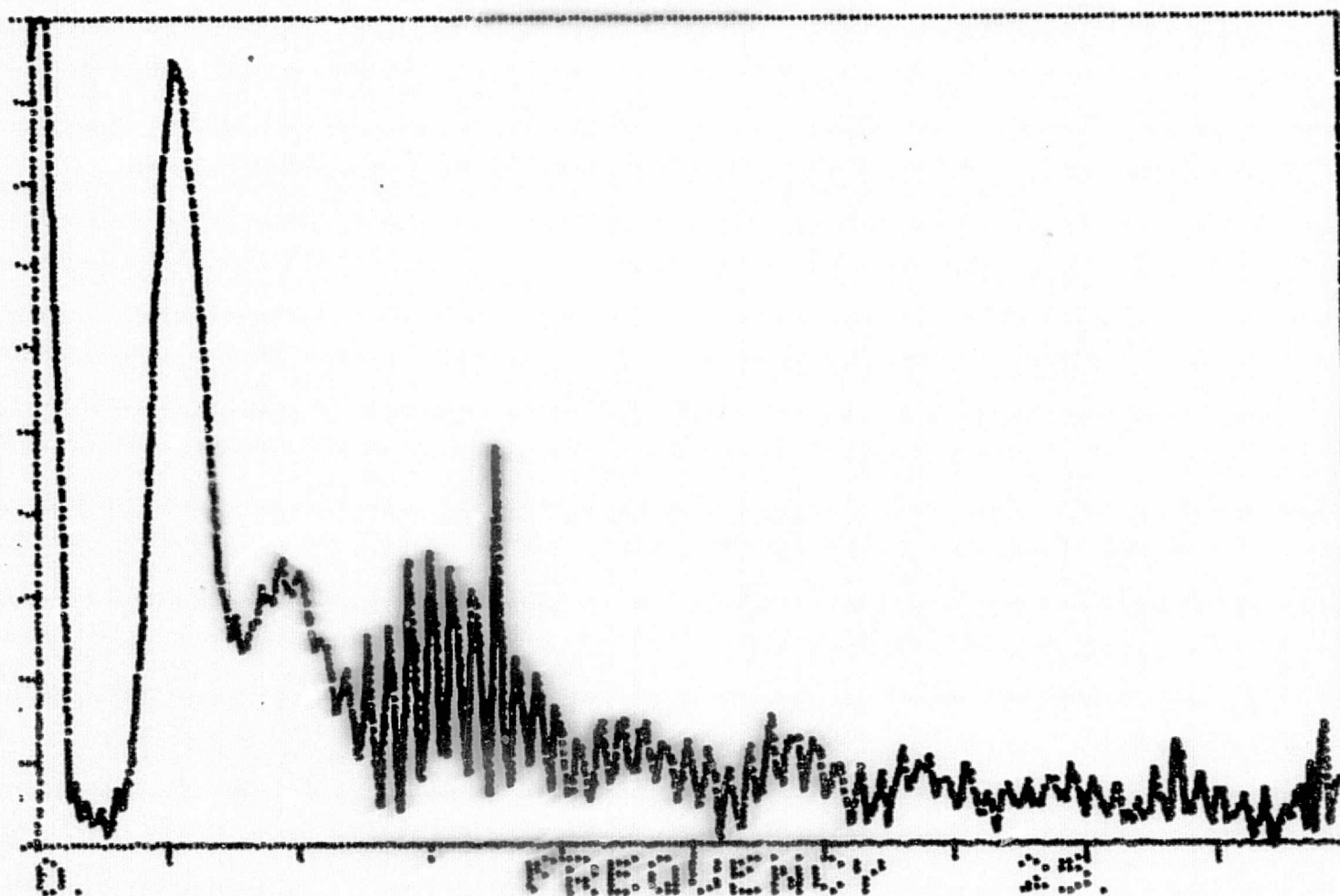
SIZE= 256

DL1/FL1

1.

mach

0.



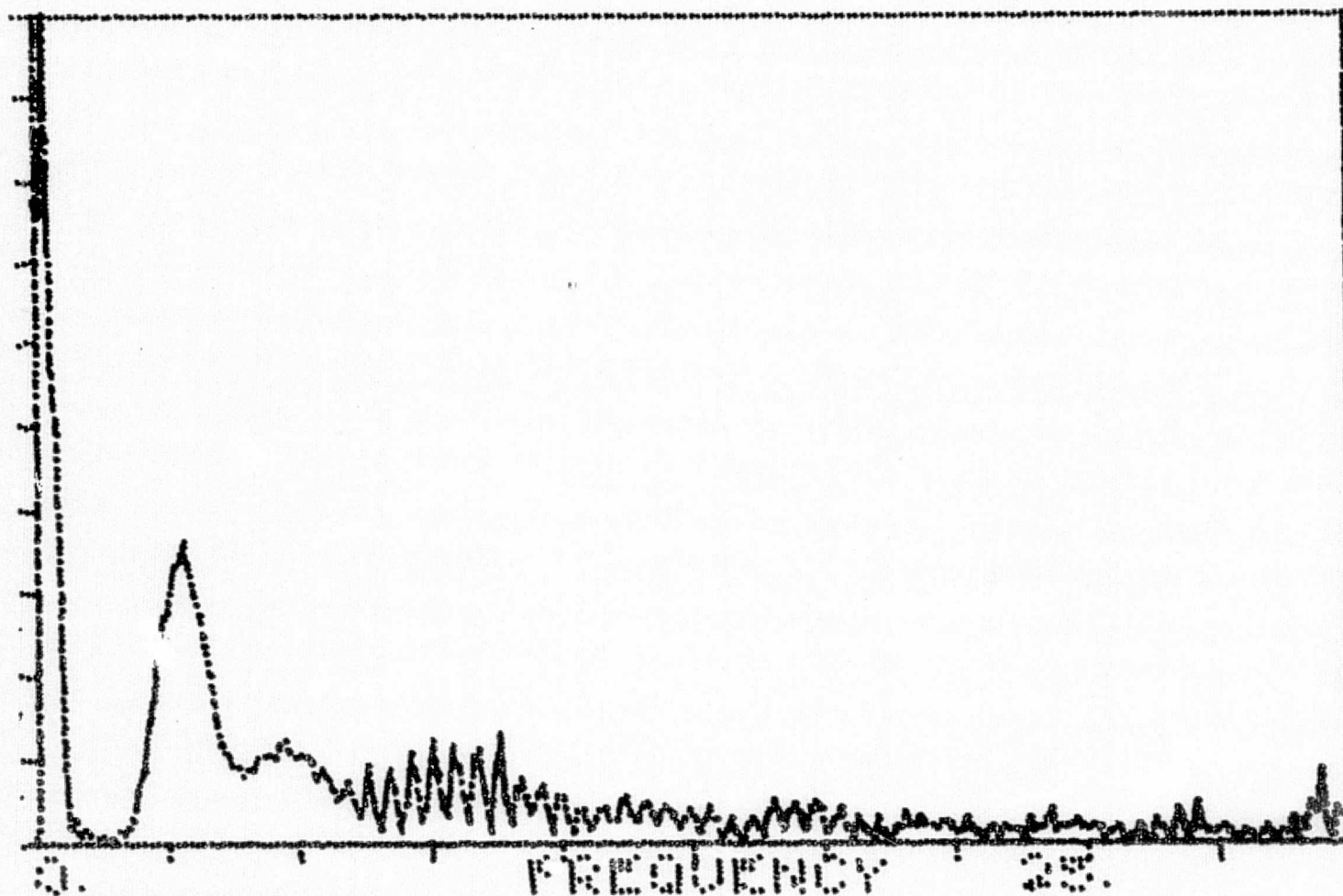
COMPLEX

SIZE= 256

3.

mag

0.



COMPLEX

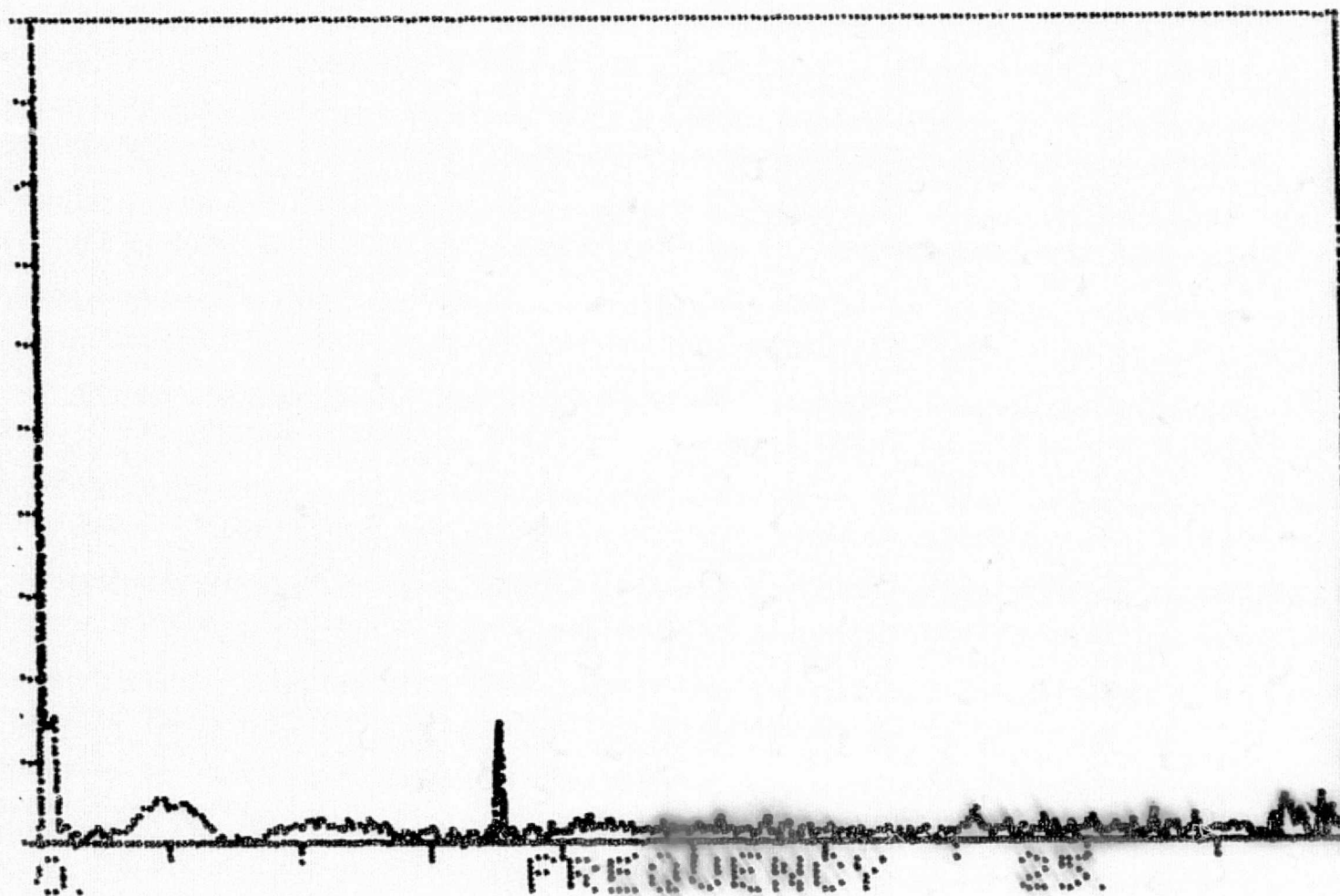
SIZE= 255

DL3/FL1

1.

MAGN

0.



COMPLEX

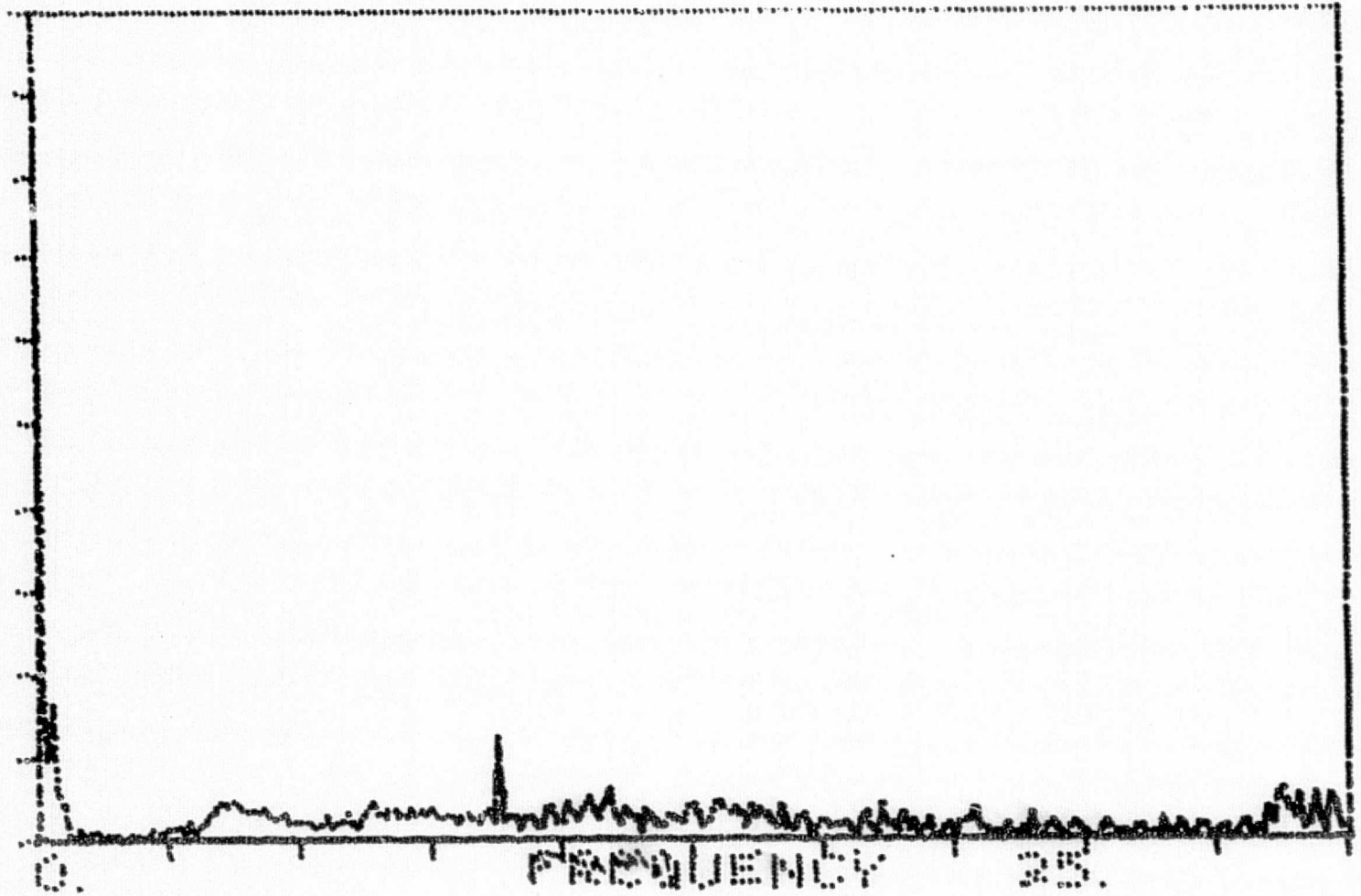
SIZE= 356

DL4/FL1

1.

19804

0.

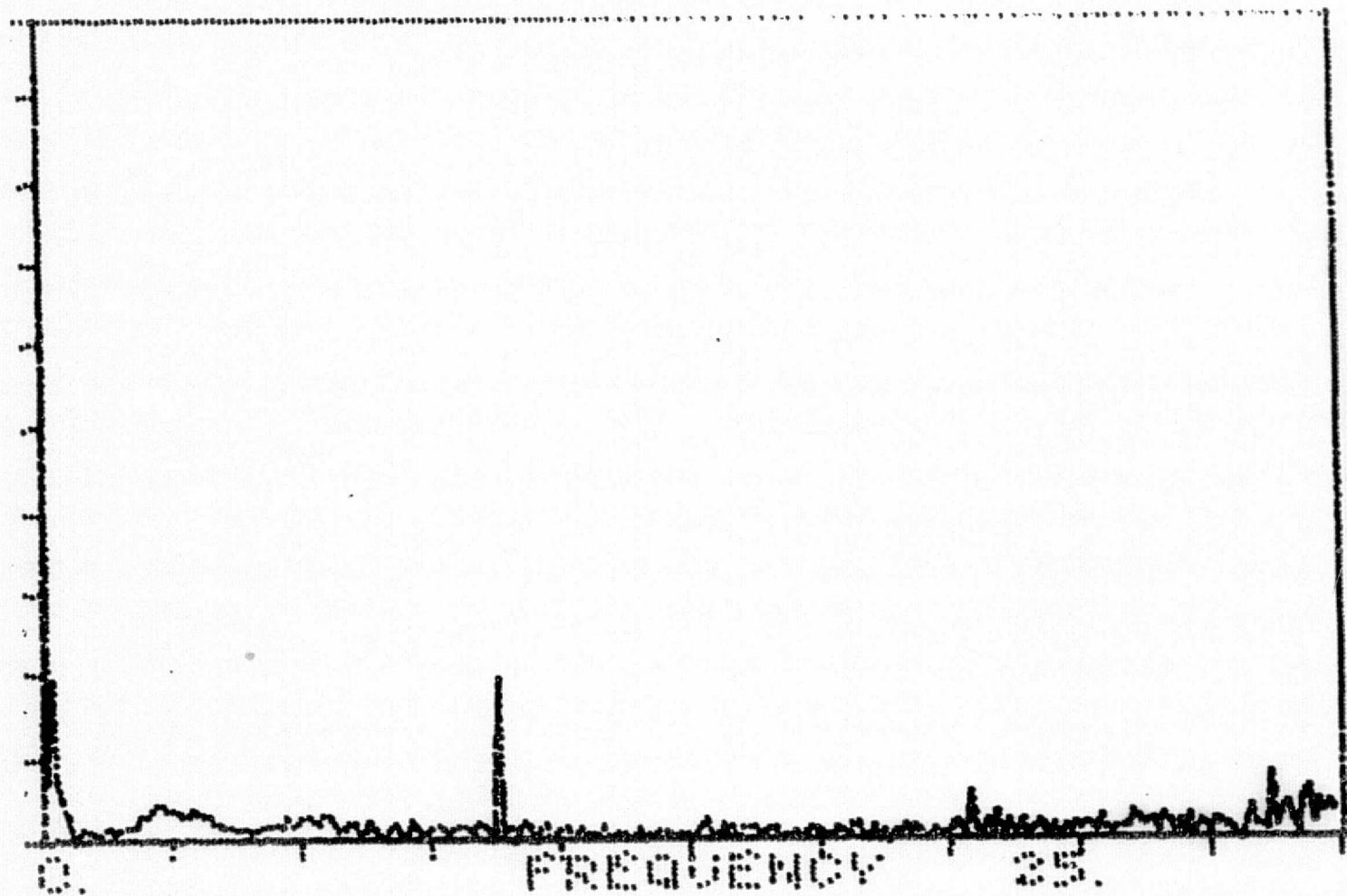


COMPLEX SIZE= 256

3.

NRON

0.



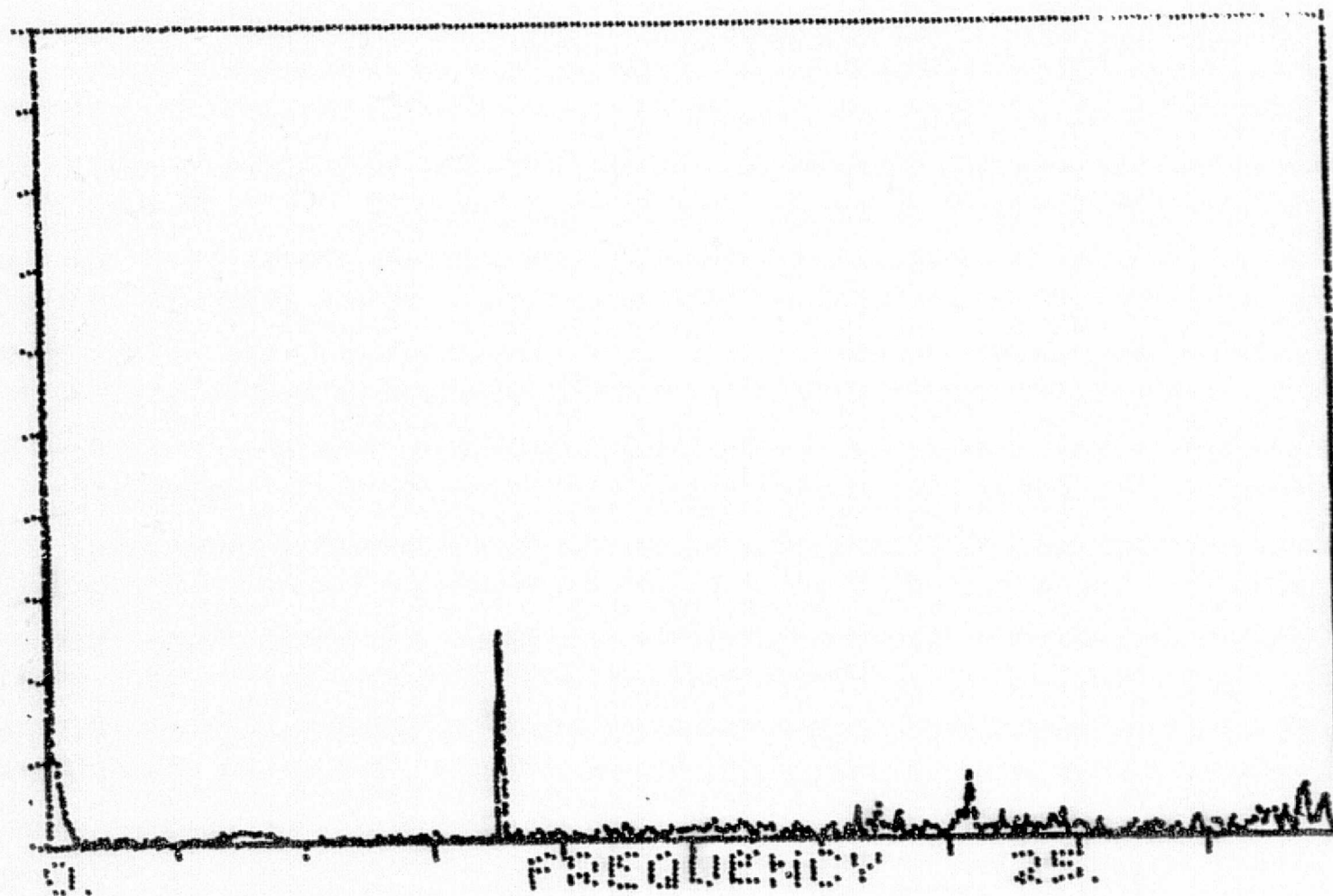
COMPLEX SIZE= 256

DL6/FL1

1.

MAGN

0.



COMPLEX

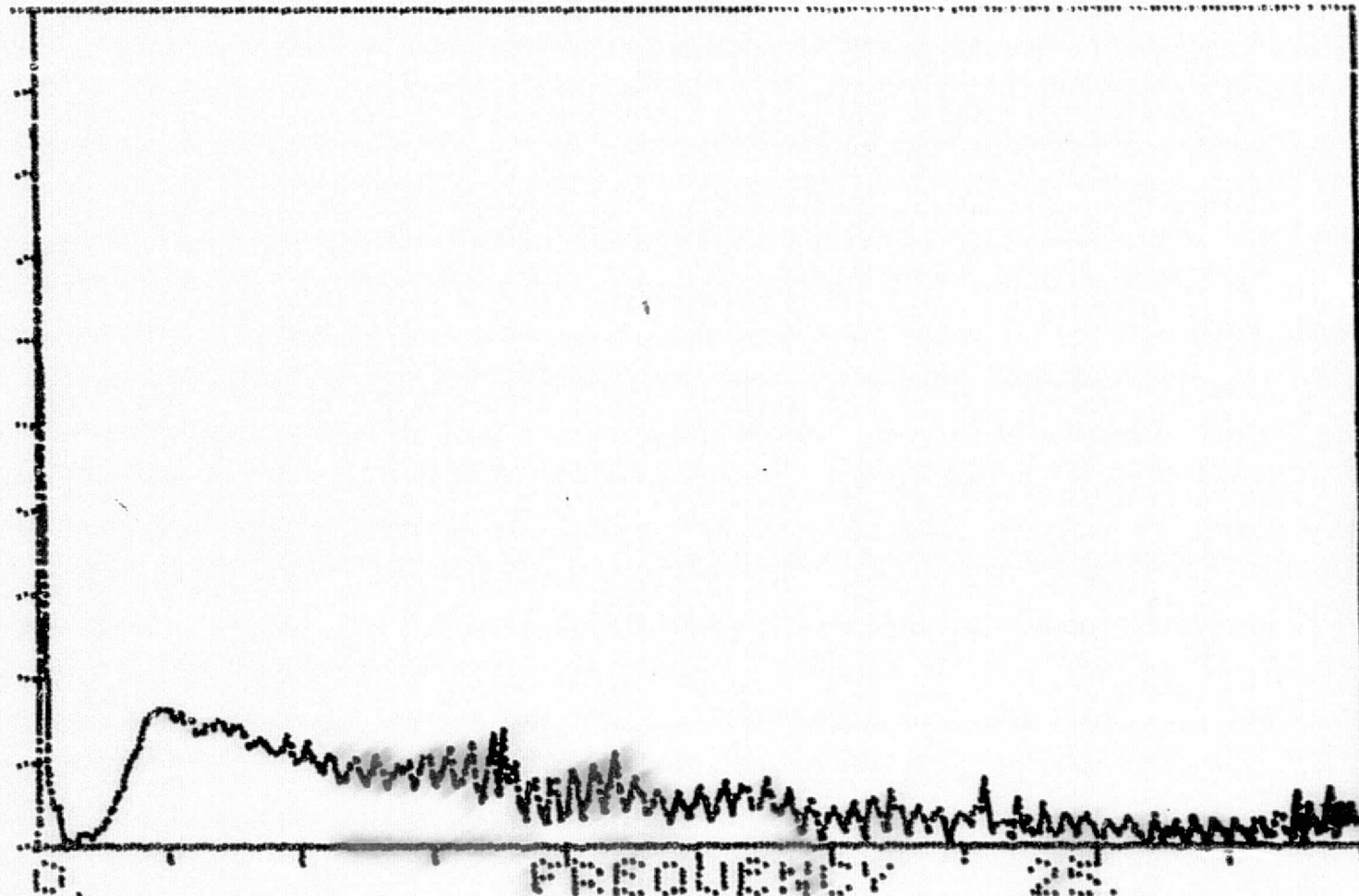
SIZE: 250

DL7/FL1

1.

MAGN

0.



COMPLEX

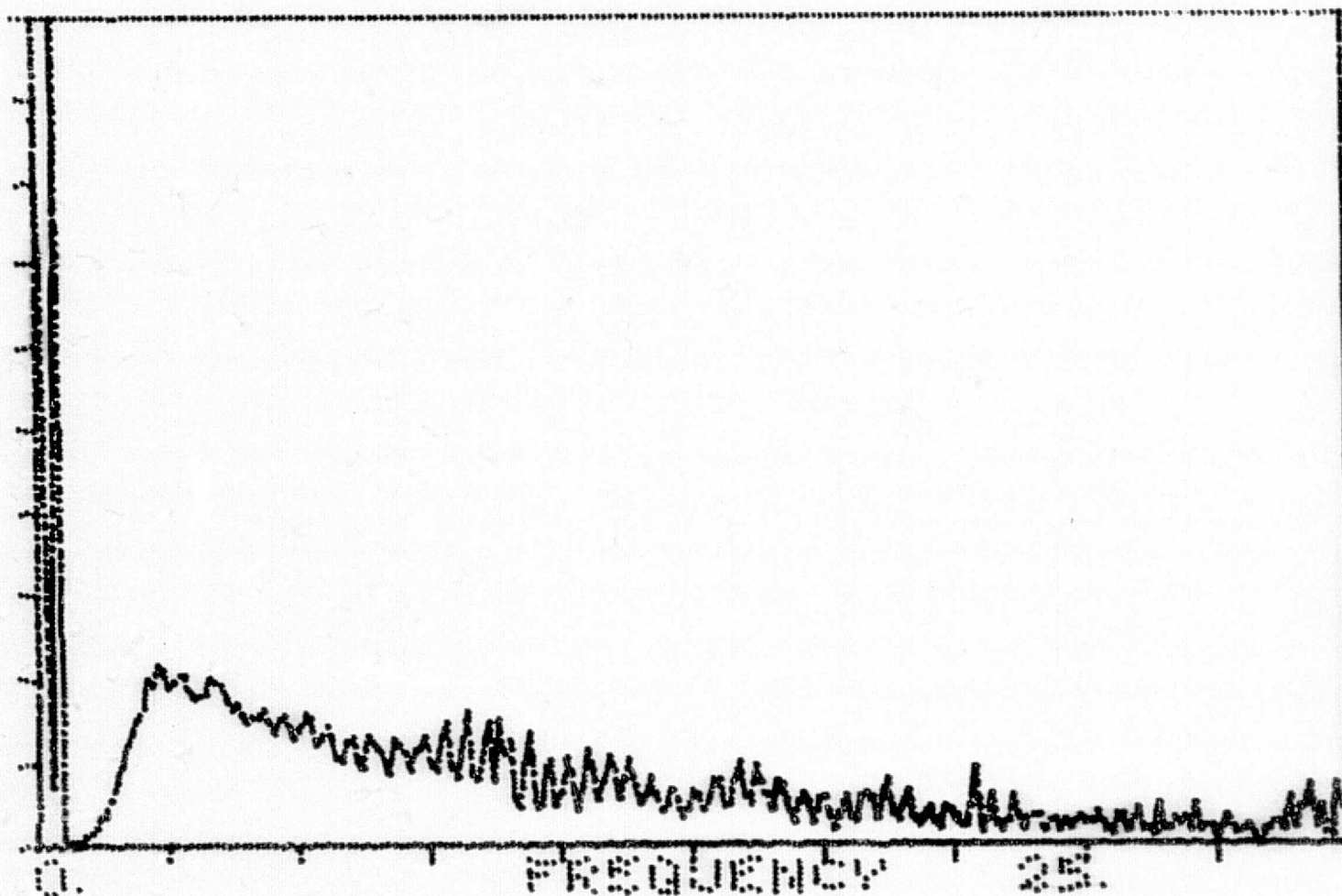
SIZE= 256

DL8/FL1

1.

MAGN

0.



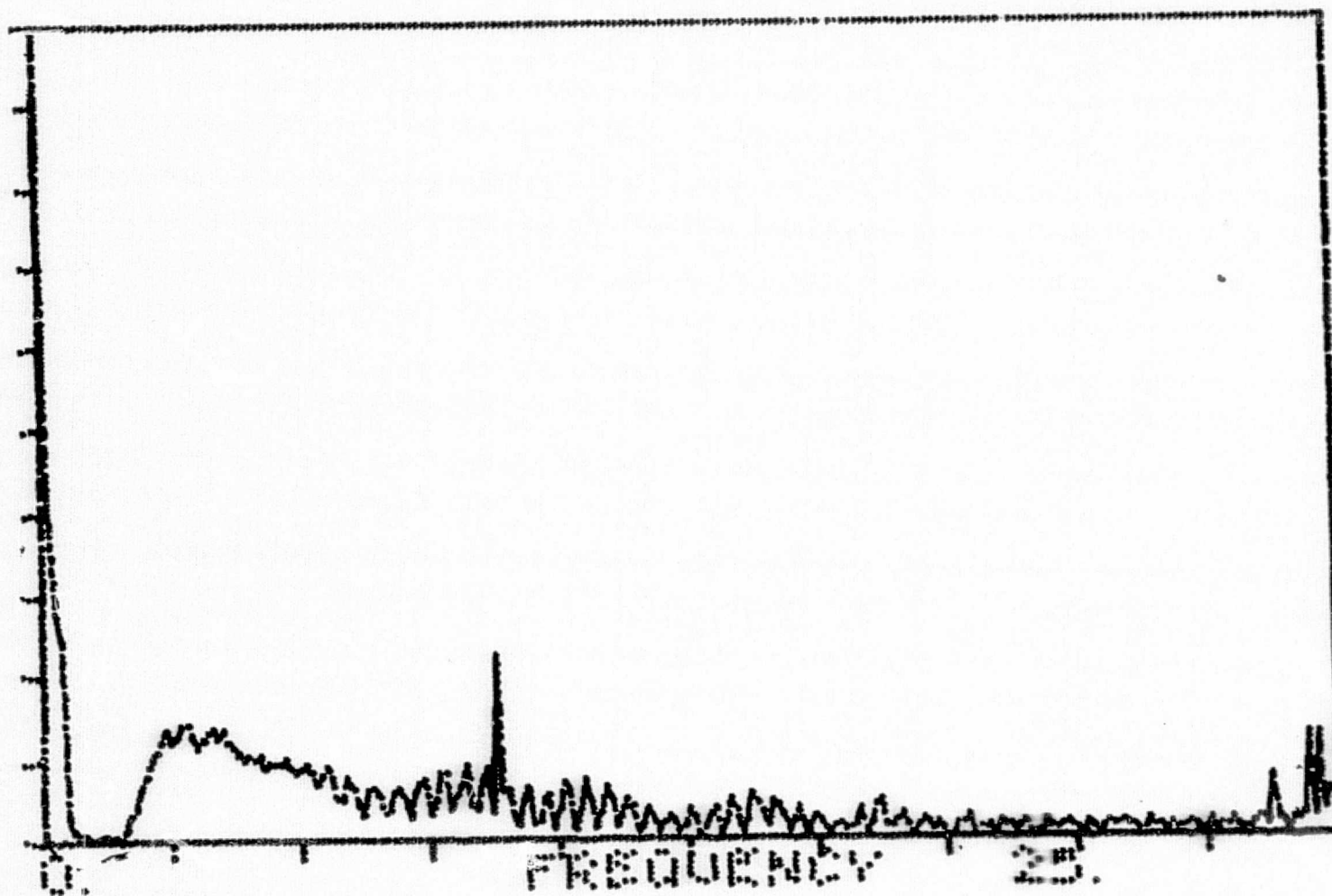
COMPLEX

SIZE= 256

3.

MAGN

0.



COMPLEX

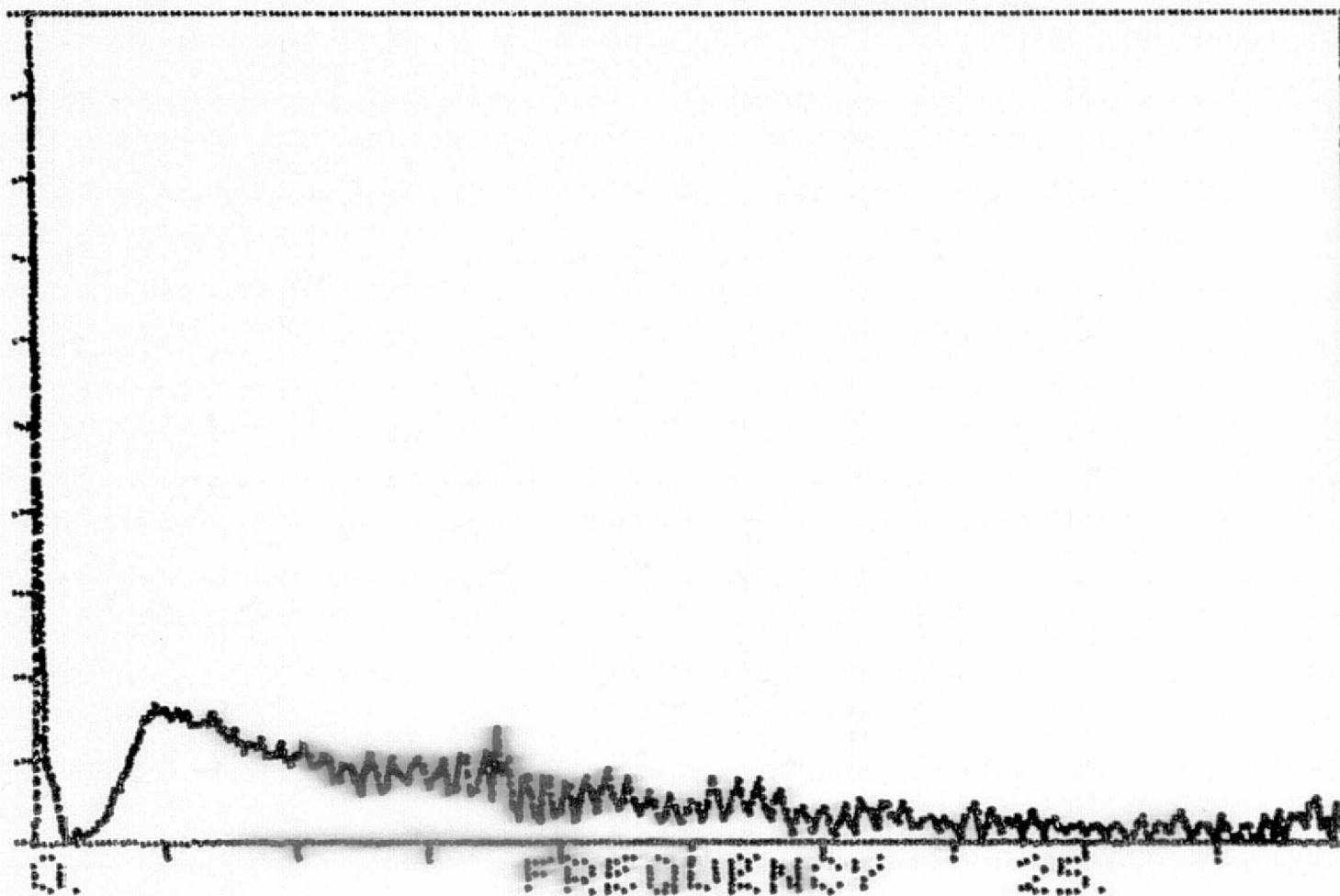
SIZE= 256

DL10/FL1

1.

MACH

0.



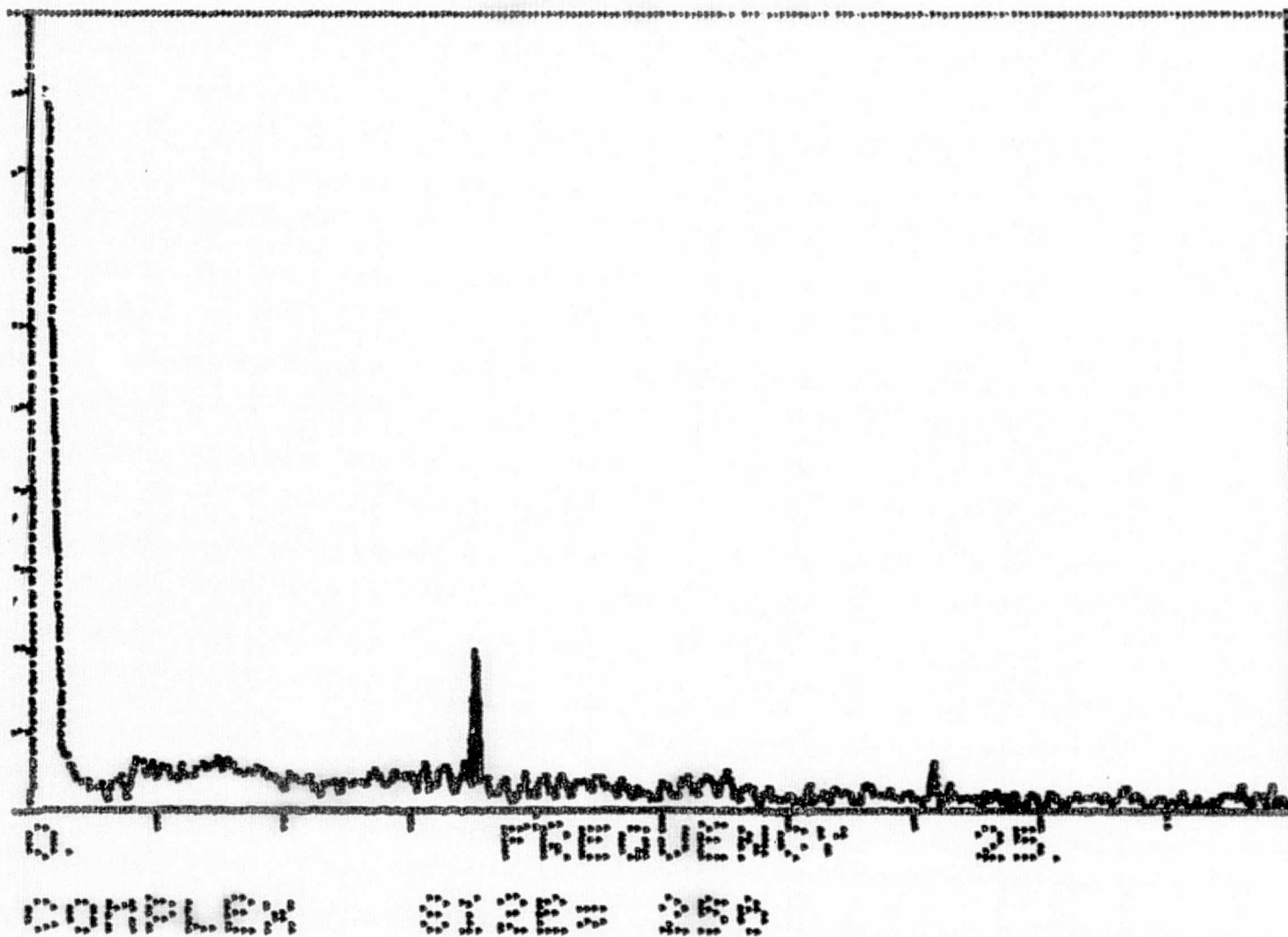
COMPLEX

SIZE= 256

1.

NAME

2.

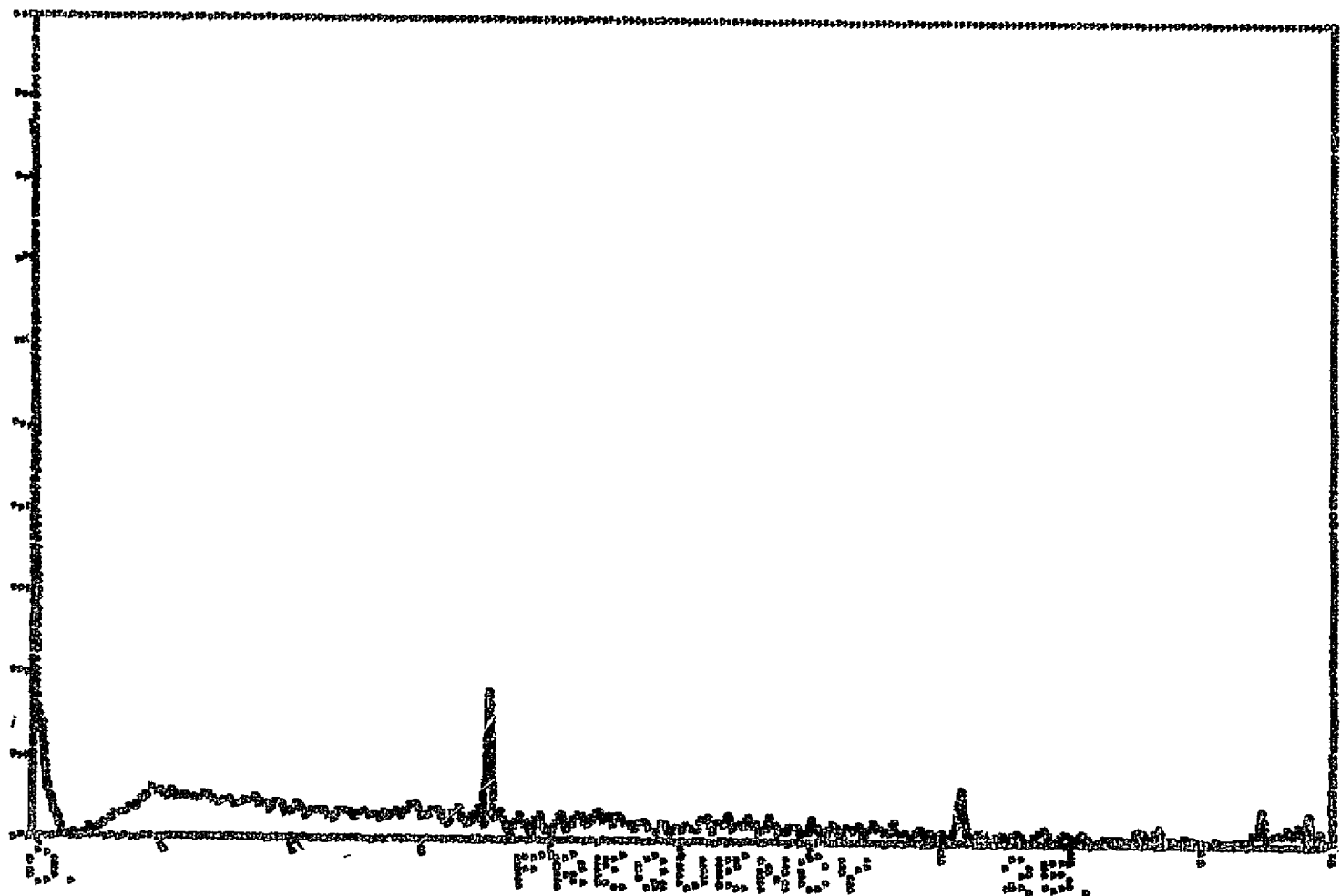


DL12/FL1

10
C-2

4.

mag

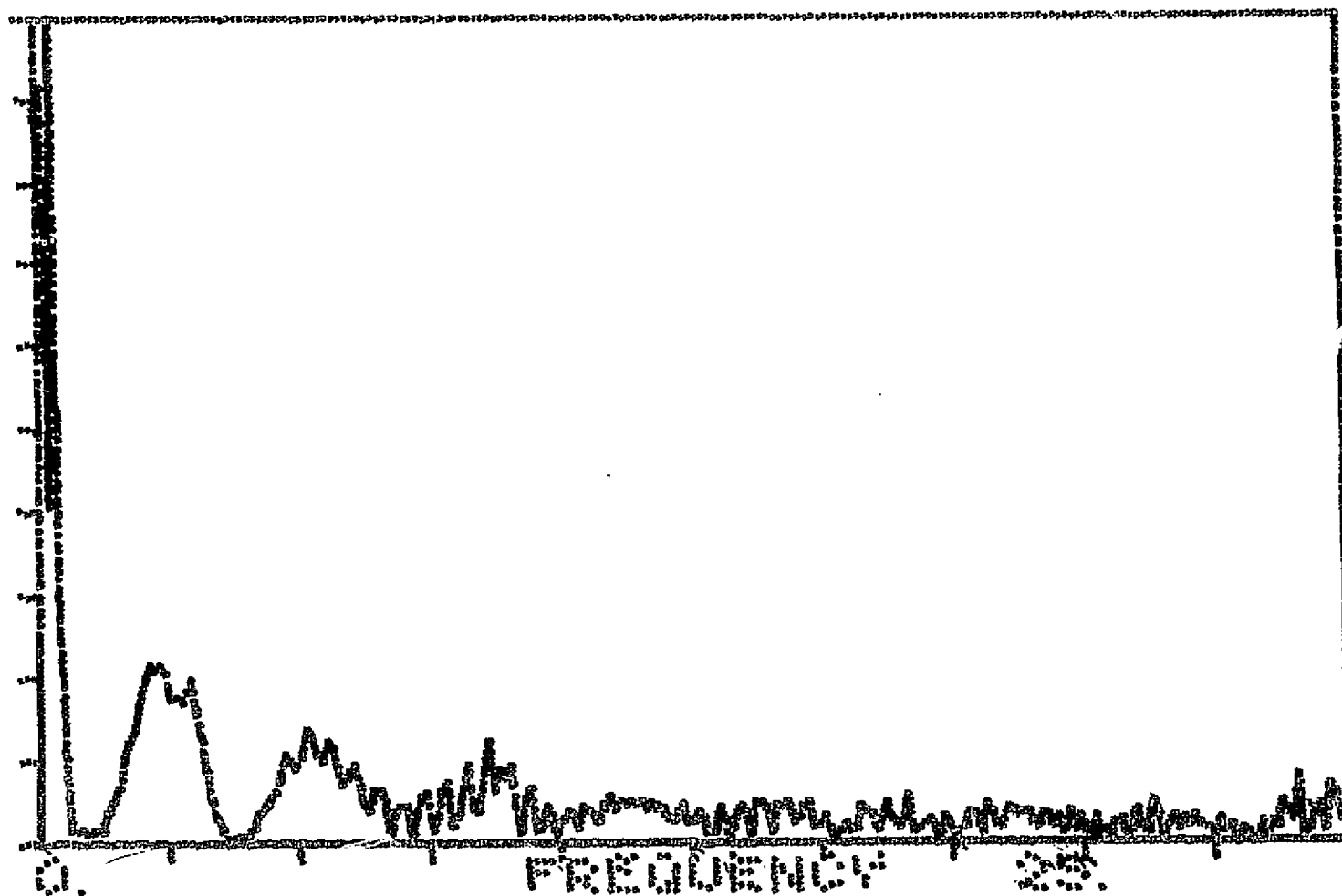


complex

size 256

1.

mean



0.

COMPLEX

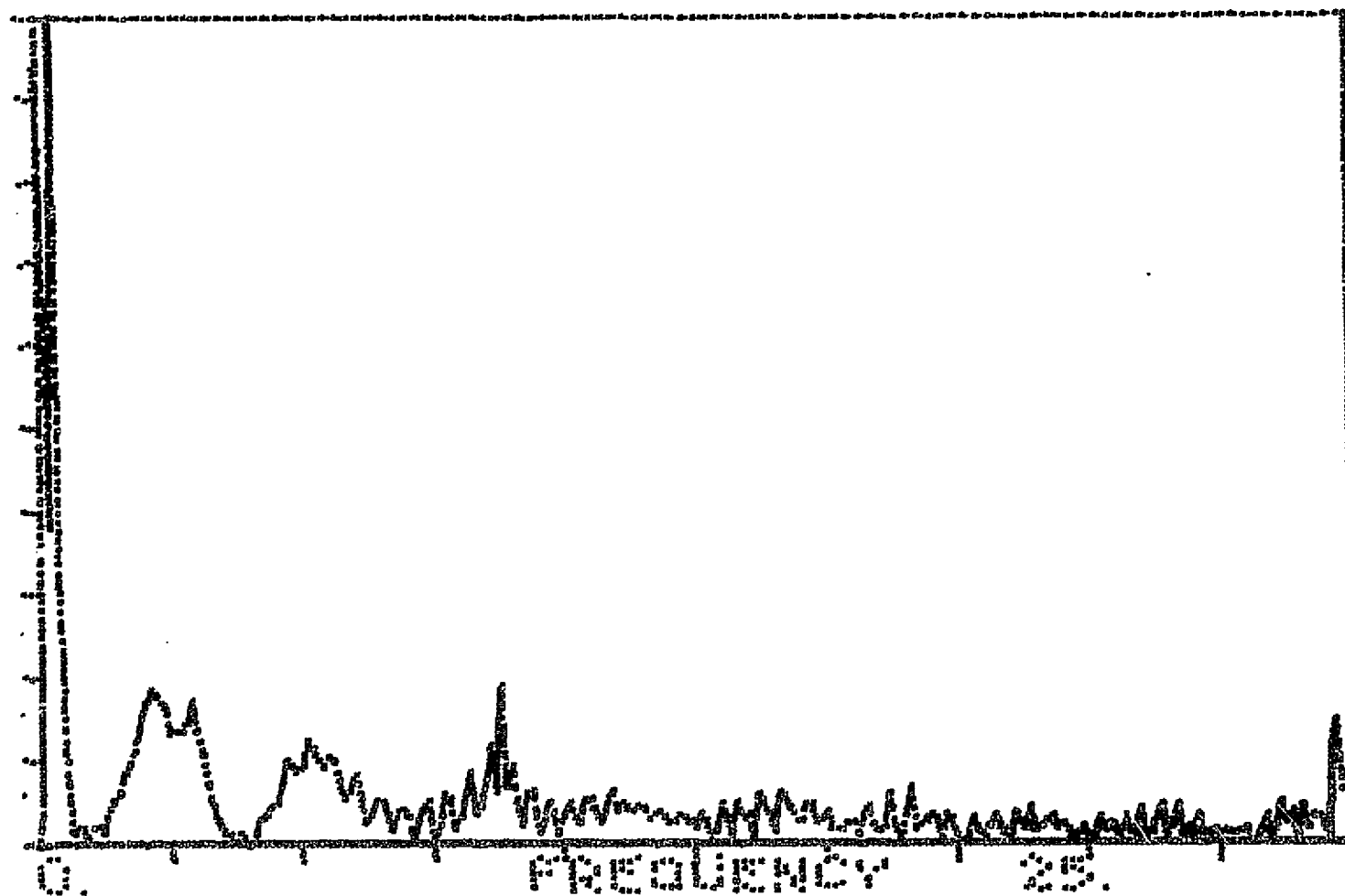
SIZE 256

DL14/FL1

1.

mag

2.



COMPLEX

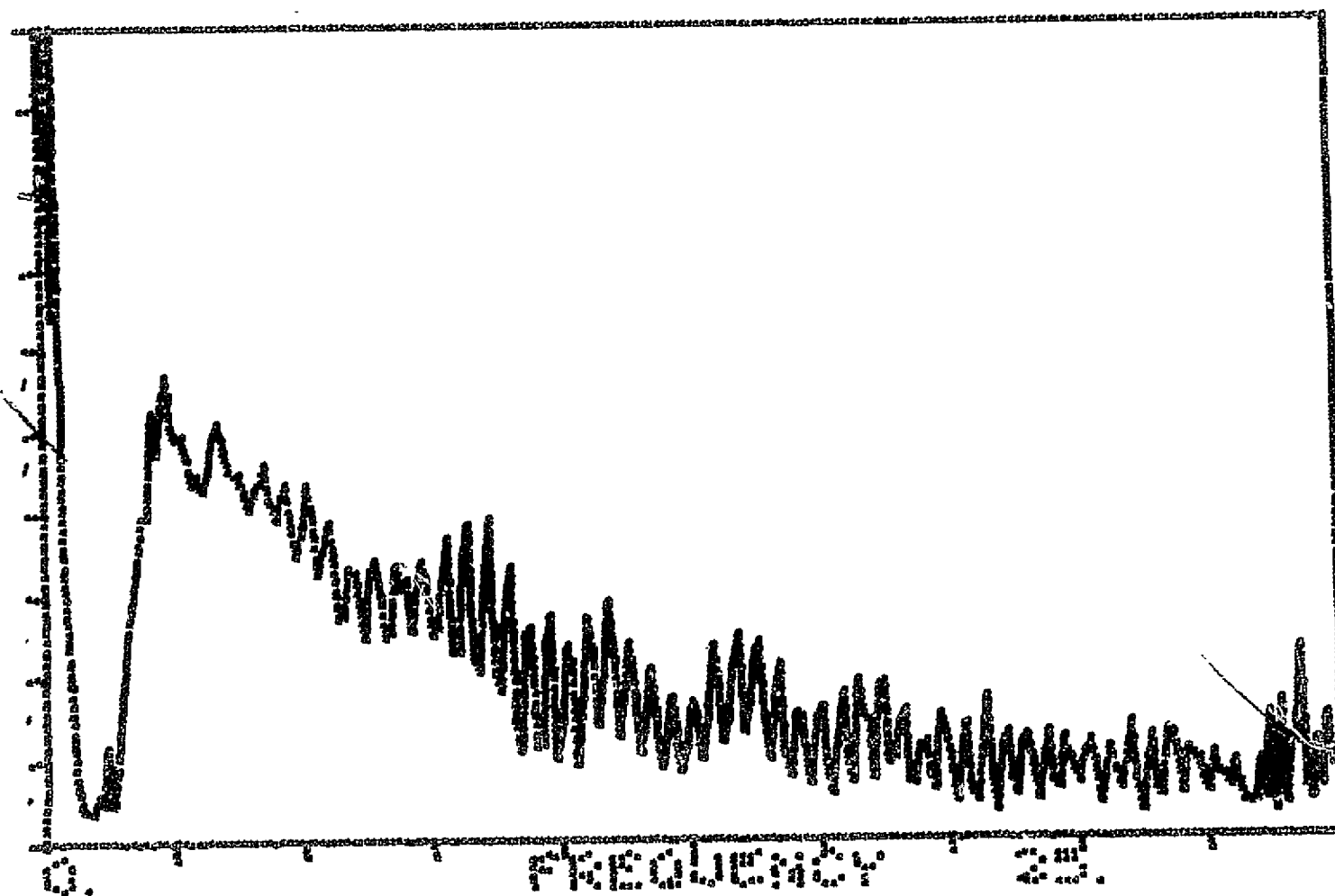
SIZE= 286

DL15/FL1

1.

1964

0.



100

COMPLEX

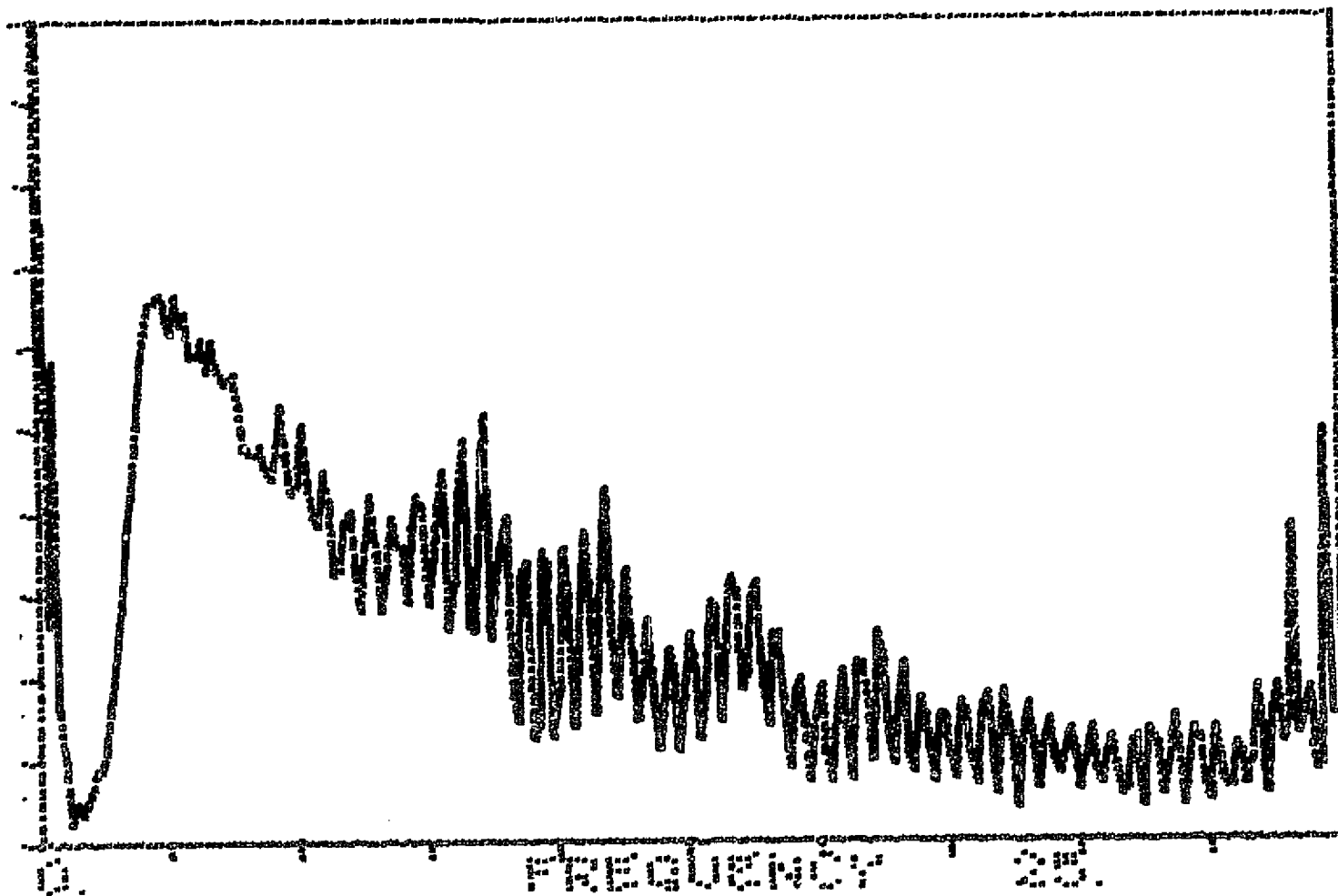
SIZE: 256

DL16/FL1

4.

1964

0.



COMPLEX

81220 250

DL17/FL1

VOLUME II

RUN 13 TEST DATA

Y-AXIS, 9000 POUND/ACTUATOR TEST LEVEL,
ACTUATORS 180° OUT OF PHASE

1 HEADING: TRAIN TRACK TRANSFER 9000 LB TEST 3/19/75

SWEEP PARAMETERS:

2 MODE 1=LOG, 0=LIN: 1.
 3 TYPE 1=UNI-DIRECTIONAL, 0=BI-DIRECTIONAL: 1.
 4 START, END FREQ, HZ: .5 50.
 FREQ RANGE -- OCTAVES, DECADES: 6.644 2.
 5 SPECIFICATION 1=RATE, 0=DURATION: 1.
 6 UNITS 1=OCT/MIN, 0=DEC/MIN: 1.
 7 RATE, OCT/MIN: 2.
 SWEEP DURATION -- MIN, SEC: 3. 19.

TEST LENGTH:

8 SPECIFICATION 1=TIME, 0=SWEEP CYCLES: 0.
 9 CYCLES: 1.
 TEST TIME -- HRS, MIN, SEC: 0. 3. 19.

START-UP AND SHUT-DOWN:

10 START-UP TIME, SEC: 120.
 11 SHUT-DOWN TIME, SEC: .5

VIBRATION LIMITS (P-P):

12 DISPLACEMENT, IN: 5000.
 13 VELOCITY, IN/SEC: 9999.
 14 ACCELERATION, G: 450.

REFERENCE CONTROL SPECTRUM:

15 TYPE, VALUE, FREQ, ABORT LIMIT:	2.	40.	0.5	7.
16 TYPE, VALUE, FREQ, ABORT LIMIT:	3.	60.	1.3	4.
17 TYPE, VALUE, FREQ, ABORT LIMIT:	2.	60.	50.	4.
18 TEST LEVEL (DB BELOW REF):	0.			

ACCELERATION SIGNALS:

19 NR OF SIGNALS: 2.
 CHANNEL NRS: 1. 2.
 20 1=PEAK, 0=RMS: 0.
 21 SENSITIVITY, MV/G: 20.
 22 STRATEGY 1=MAX, 0=AVG: 1.

LIMIT SIGNALS:

23 NR OF SIGNALS: 0.

ABORT LINES:

24 NR OF LINES: 0.

ALARM LINES:

25 NR OF LINES: 0.
 26 1=DUAL-CHANNEL A/D, 0=ACE: 1.
 27 COMPRESSION SPEED 2=HIGH, 1=NORMAL, 0=LOW: 1.

POST-TEST DOCUMENTATION

TRAIN TRACK TRANSFER 9000 LB TEST 3/19/75

COMPLETION STATUS: ABORTED DURING SWEEP 1 AT 37.95 HZ.
MAXIMUM DRIVE LIMIT.

TEST DURATION -- HRS, MIN, SEC: 0 3 7

MAX ABS CONTROL ERROR: 2.57 DB AT 29.49 HZ.
AVG ABS CONTROL ERROR: .61 DB.CONTROL
CHANNEL FREQ RANGE (HZ)

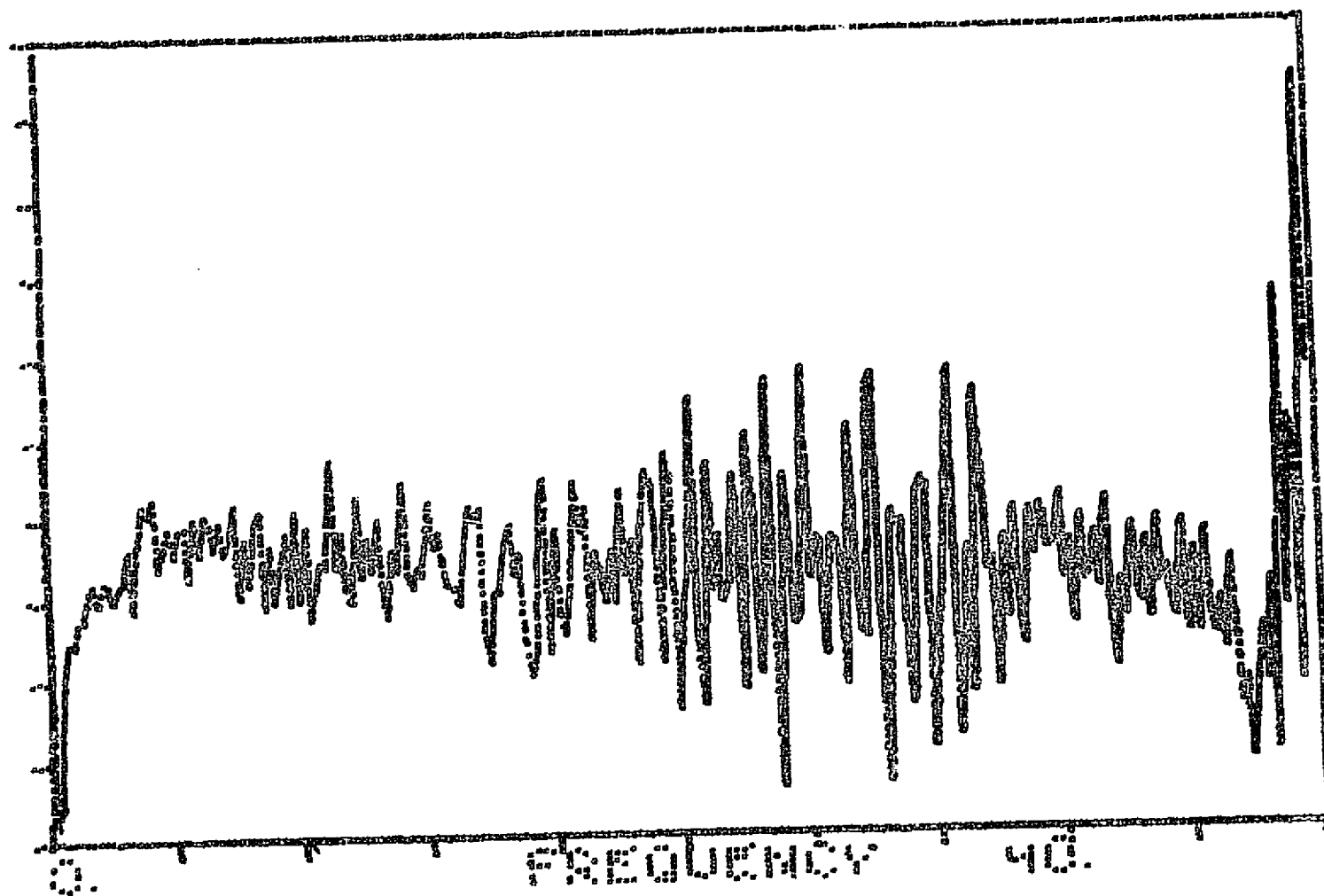
SWEEP :

1	.5	--	13.52
2	13.52	--	13.57
1	13.67	--	13.82
2	13.82	--	14.29
1	14.29	--	14.47
2	14.47	--	15.31
1	15.31	--	15.43
2	15.43	--	15.61
1	15.61	--	17.05
2	17.05	--	17.08
1	17.08	--	22.16
2	22.16	--	22.23
1	22.23	--	22.68
2	22.68	--	22.72
1	22.72	--	23.66
2	23.66	--	23.73
1	23.73	--	24.22
2	24.22	--	24.26
1	24.26	--	27.69
2	27.69	--	27.72
1	27.72	--	37.95

2.

1968

0.



COMPLEX

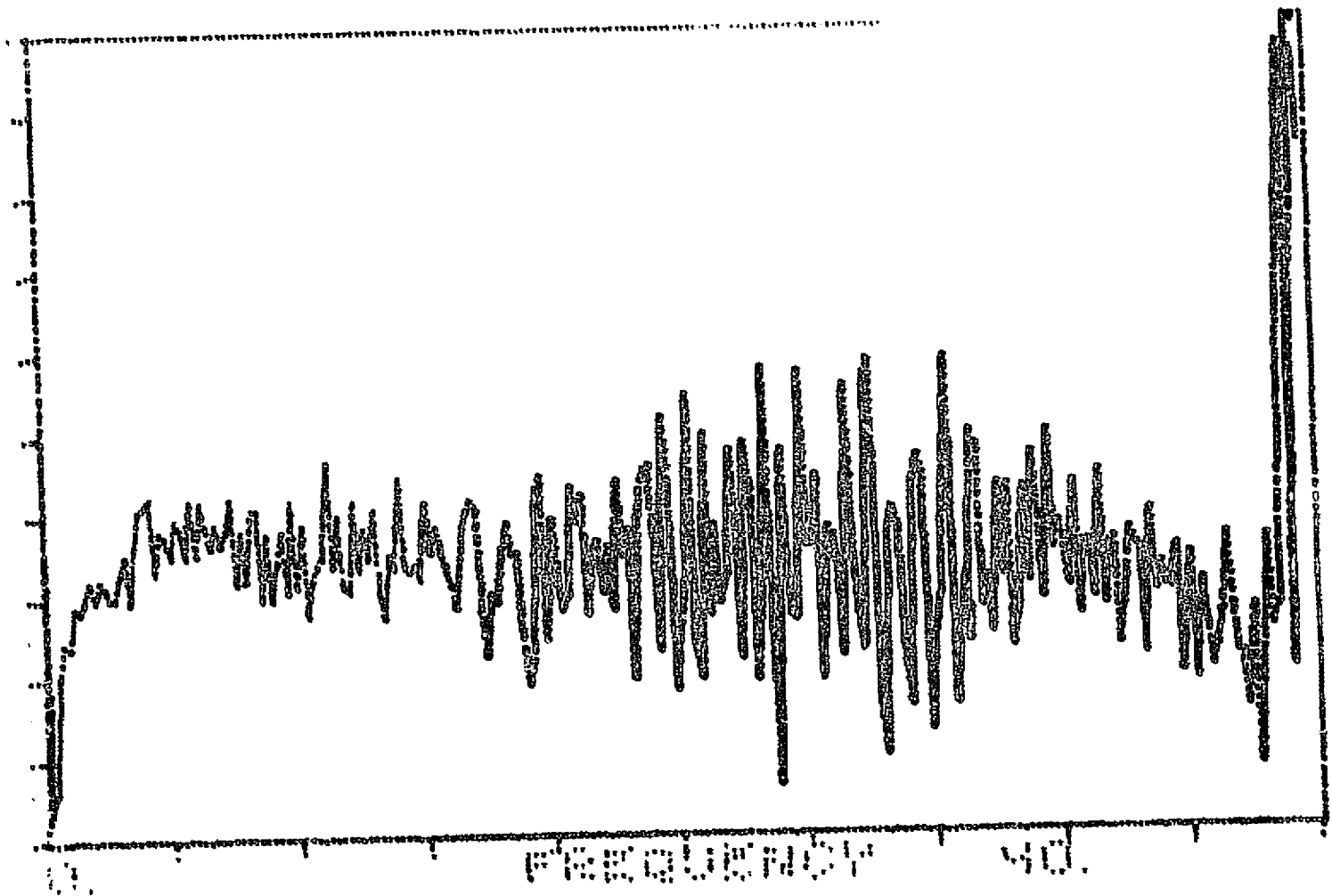
SIZE = 32768

FL1/DRIVE

3.

HA34

0.



COMPLEN

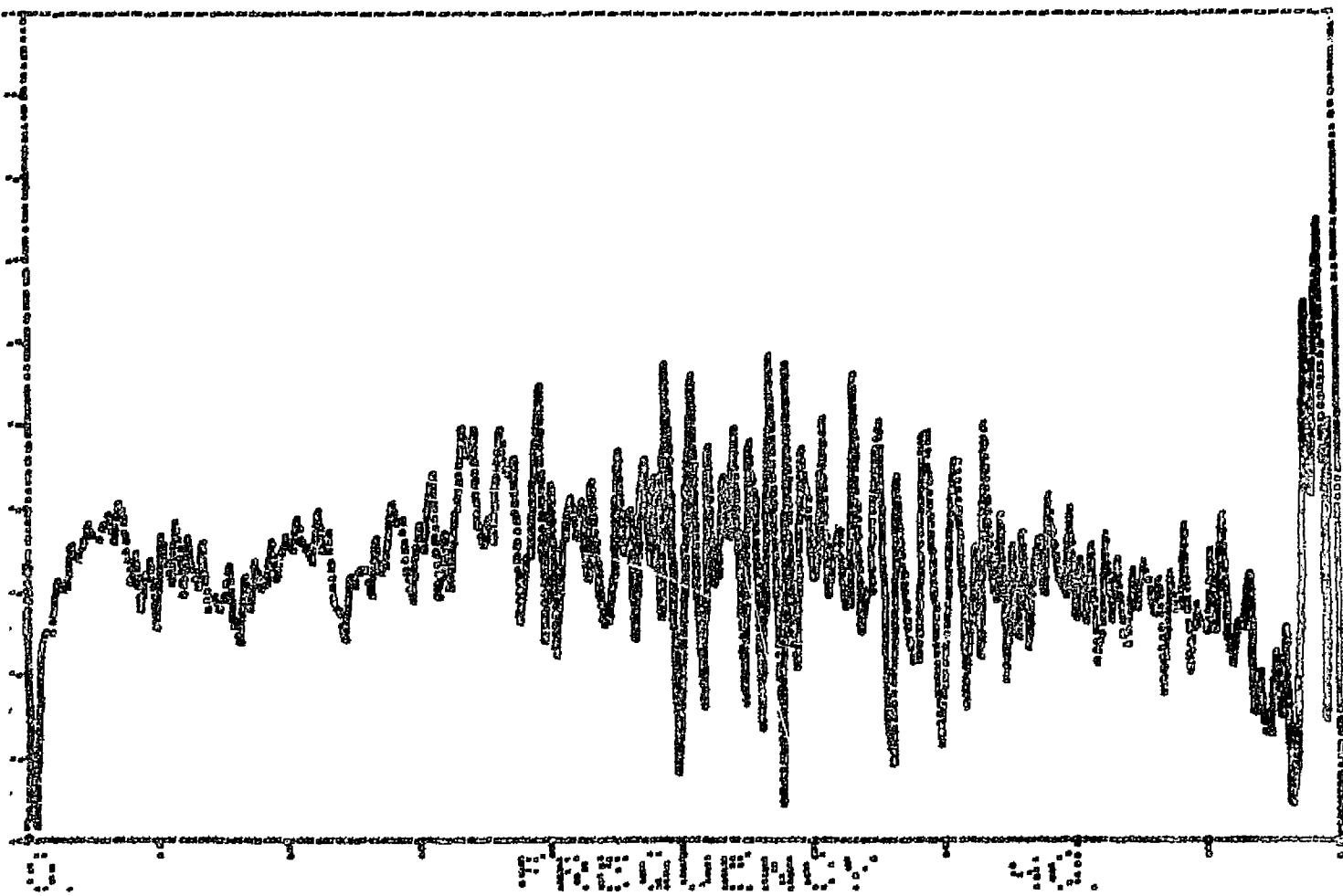
8128- 250

FL1/DRIVE

2

1908

2



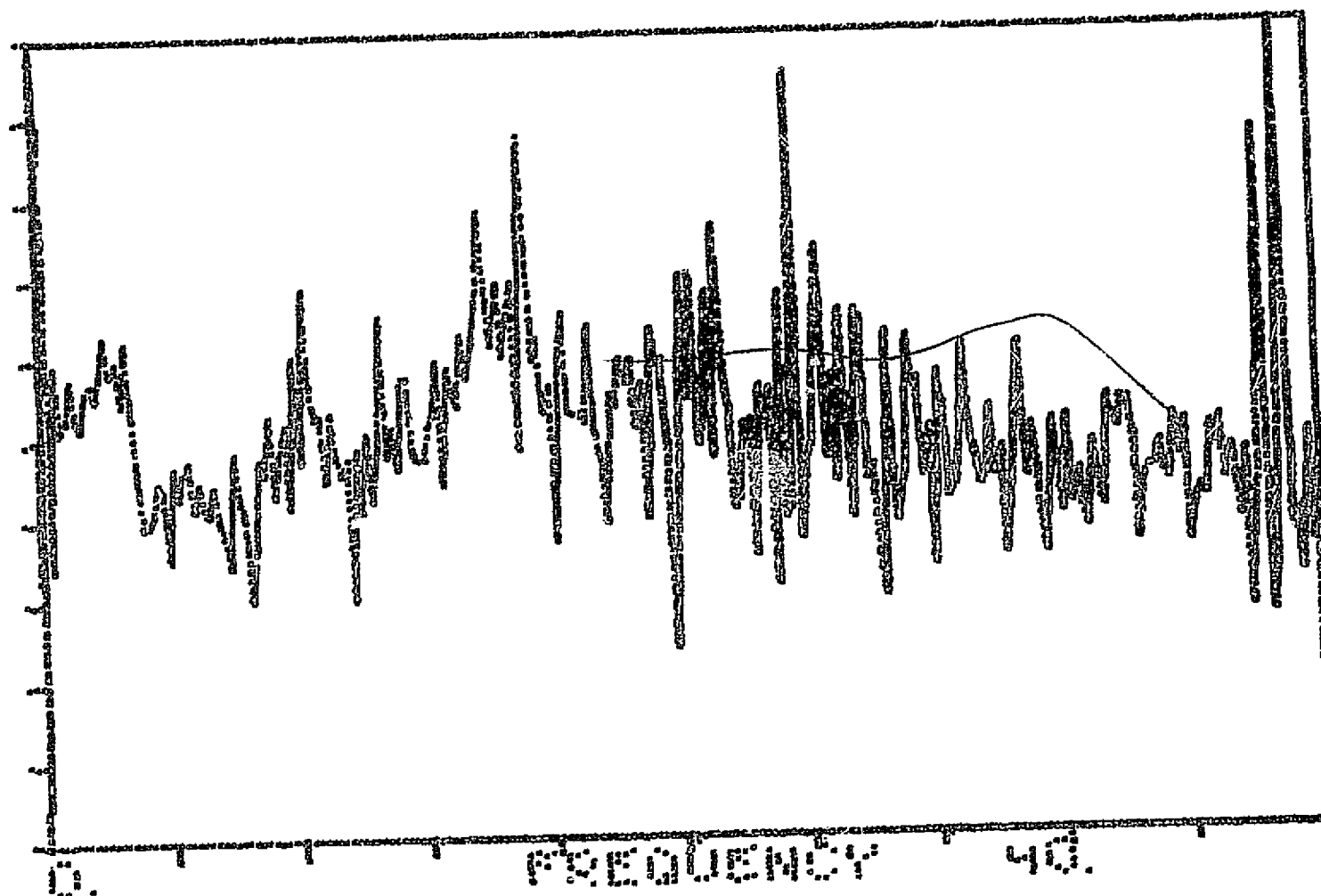
COMPLEX

SIZE: 250

FL2/DRIVE

2.

naok



COMPLEX

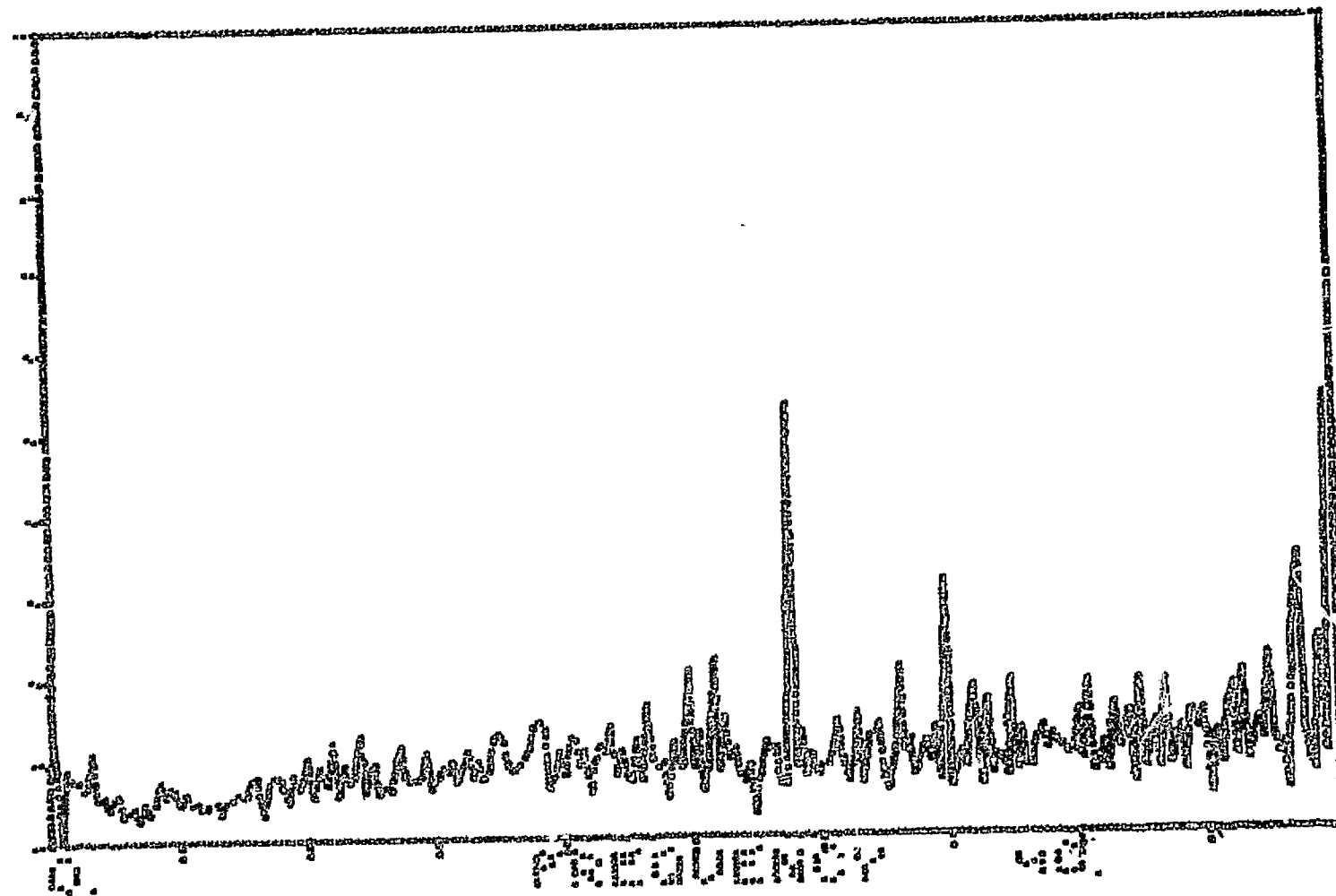
SIZE: 256

FL2/FL1

2.

19019

2.



COMPLEX

0135

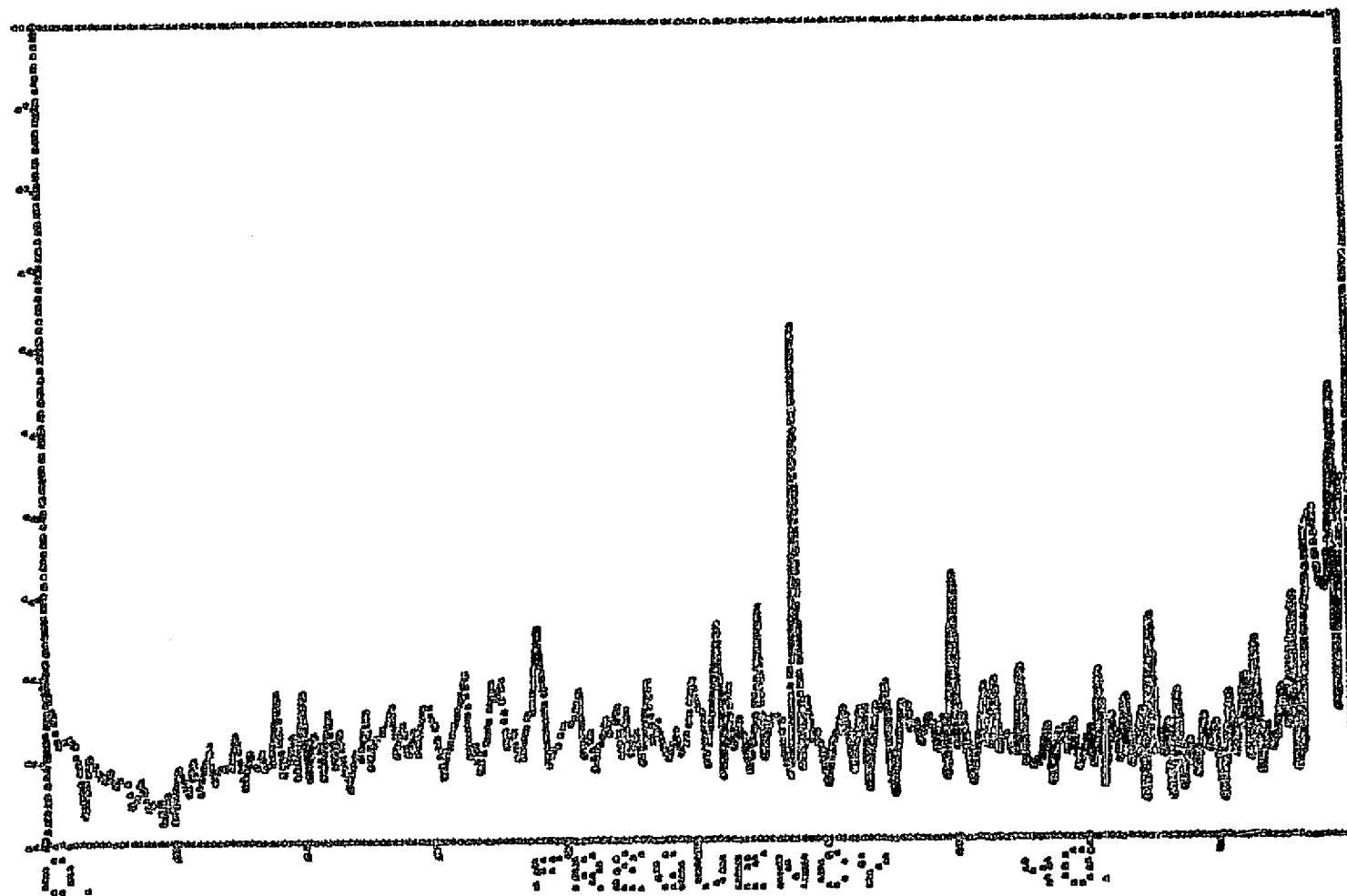
255

FV2/FL1

0.0

0.0

0.0



COUNTS

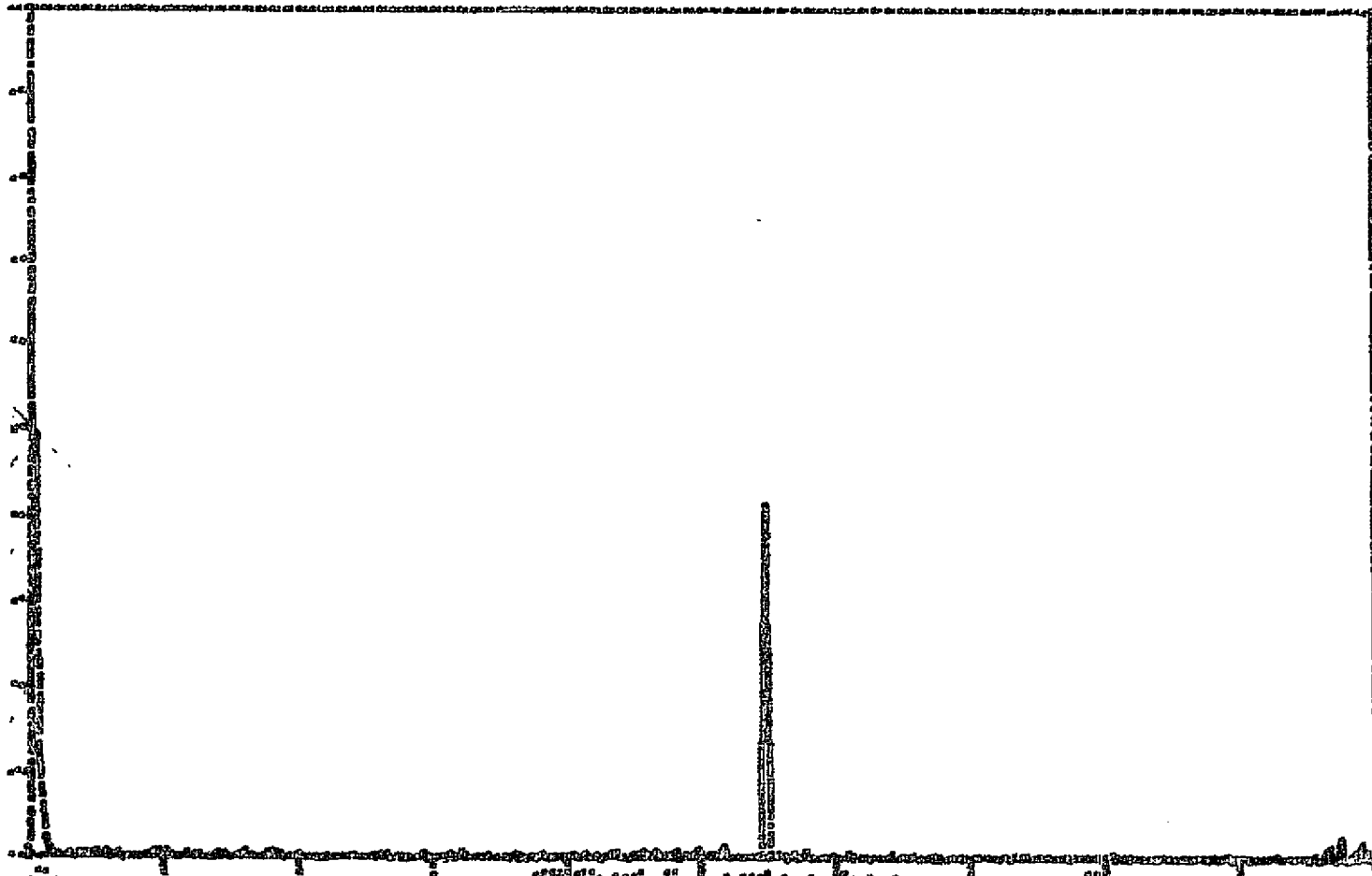
TIME

FV3/FL1

0000

0000

0000

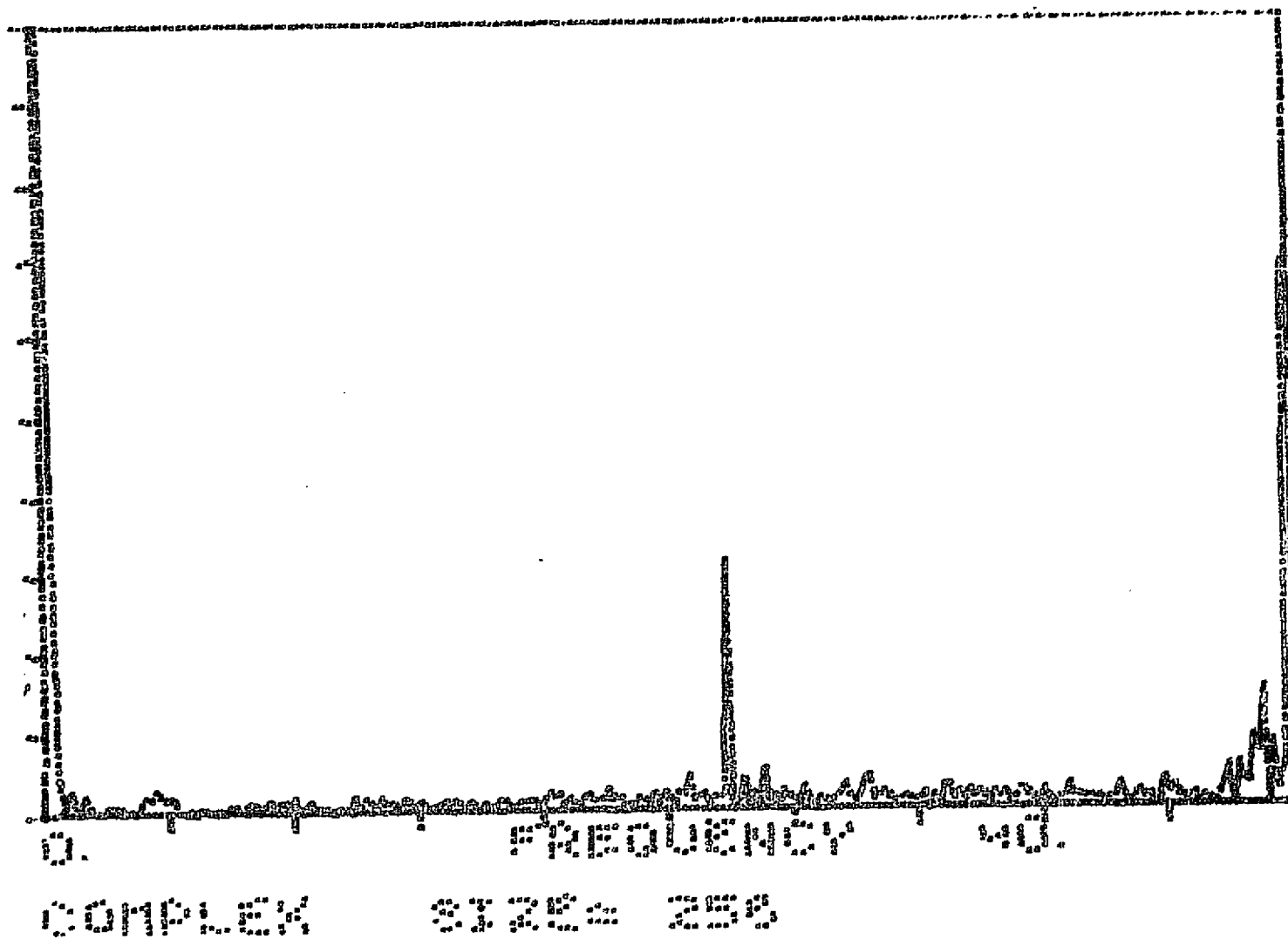


0000 0000 0000 0000

0000 0000 0000

1100

0.

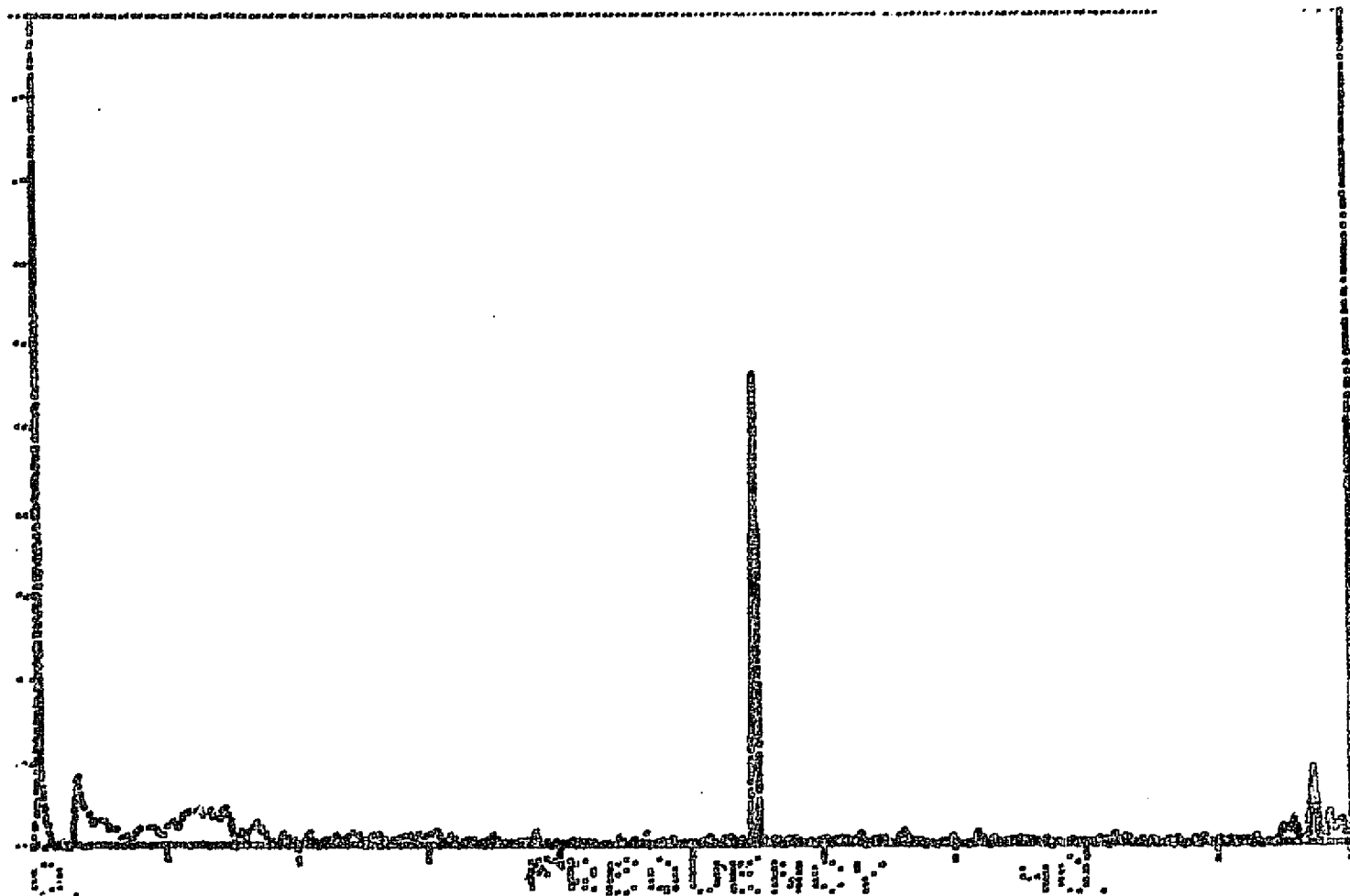


DV2/FL1

1.

1100H

0.



COMPLEX

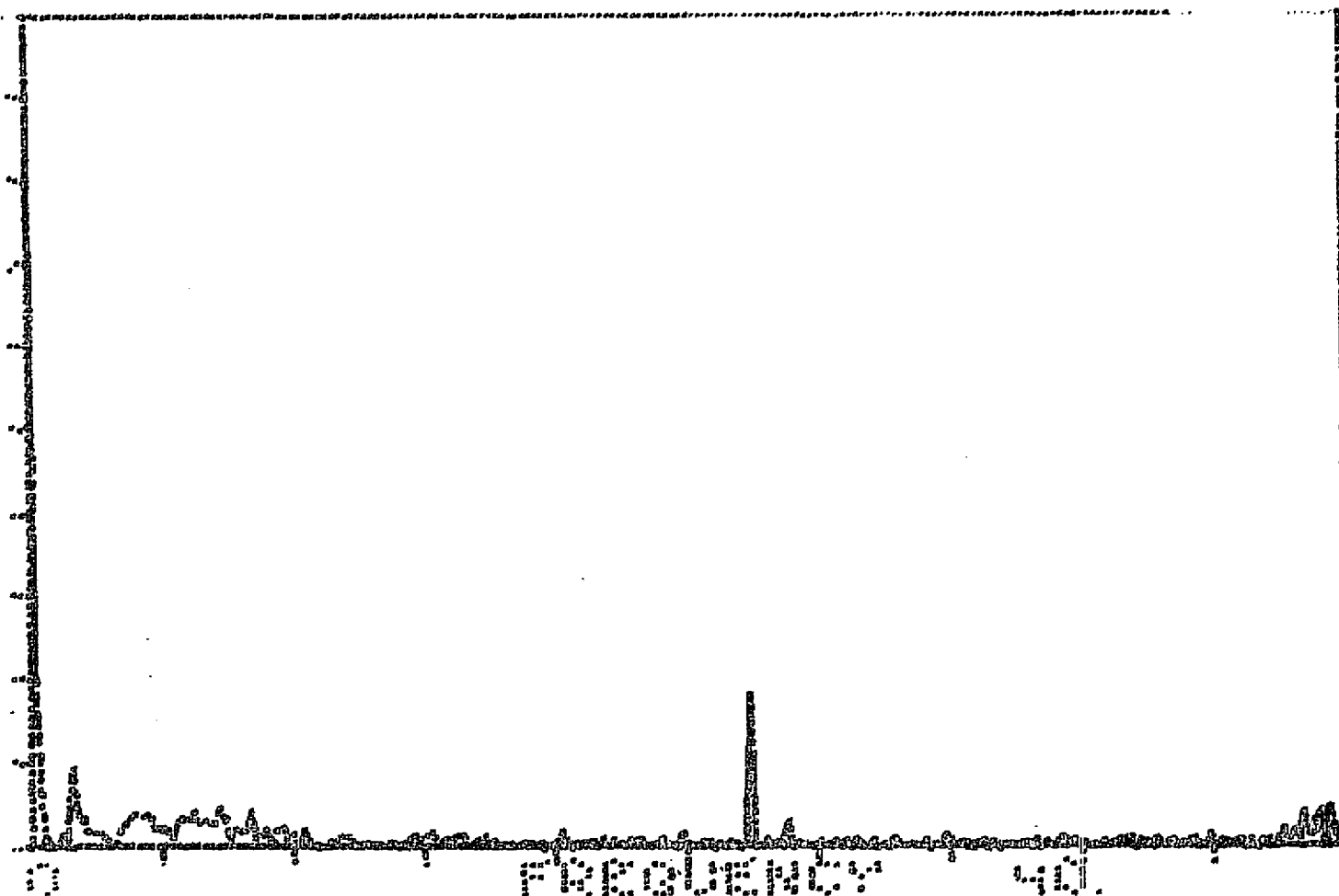
SIZE = 250

DV3/FL1

1.

1999

0.



COMPLEX

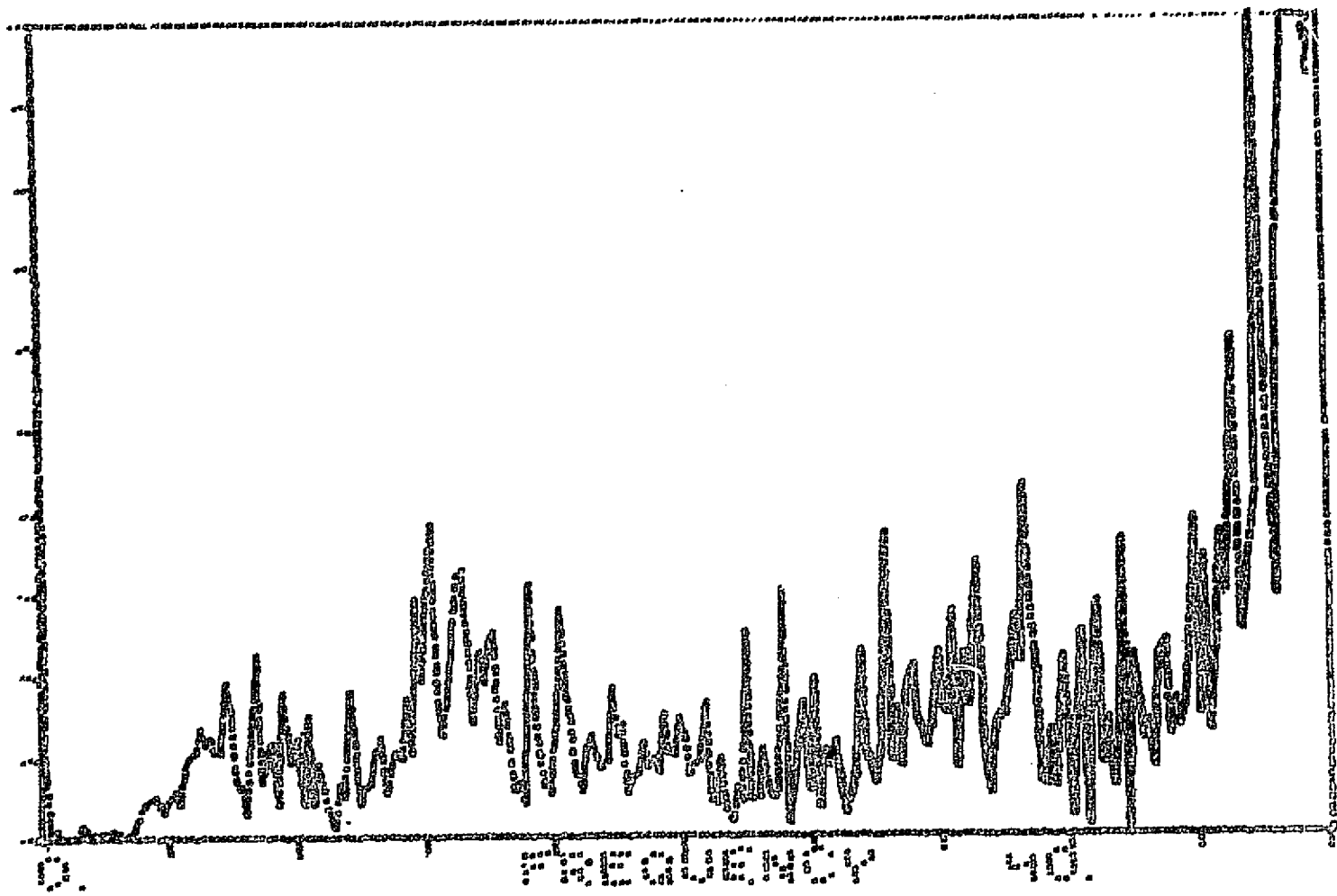
4.11 256

DV4/FL1

1.

1964

0.



COMPLEX

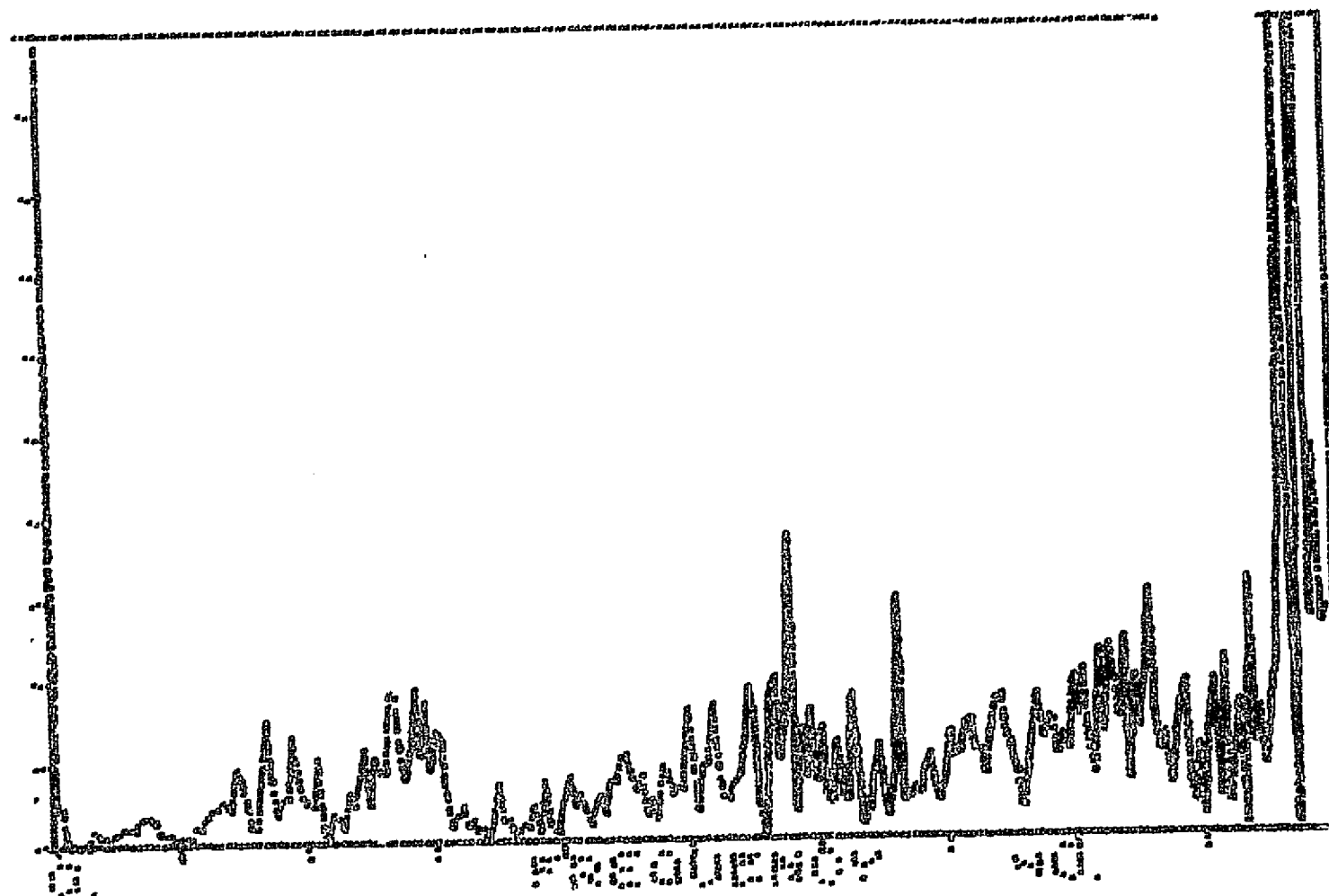
0.25 0.5

AV1/FL1

1.

1959

0.



COMPLEX

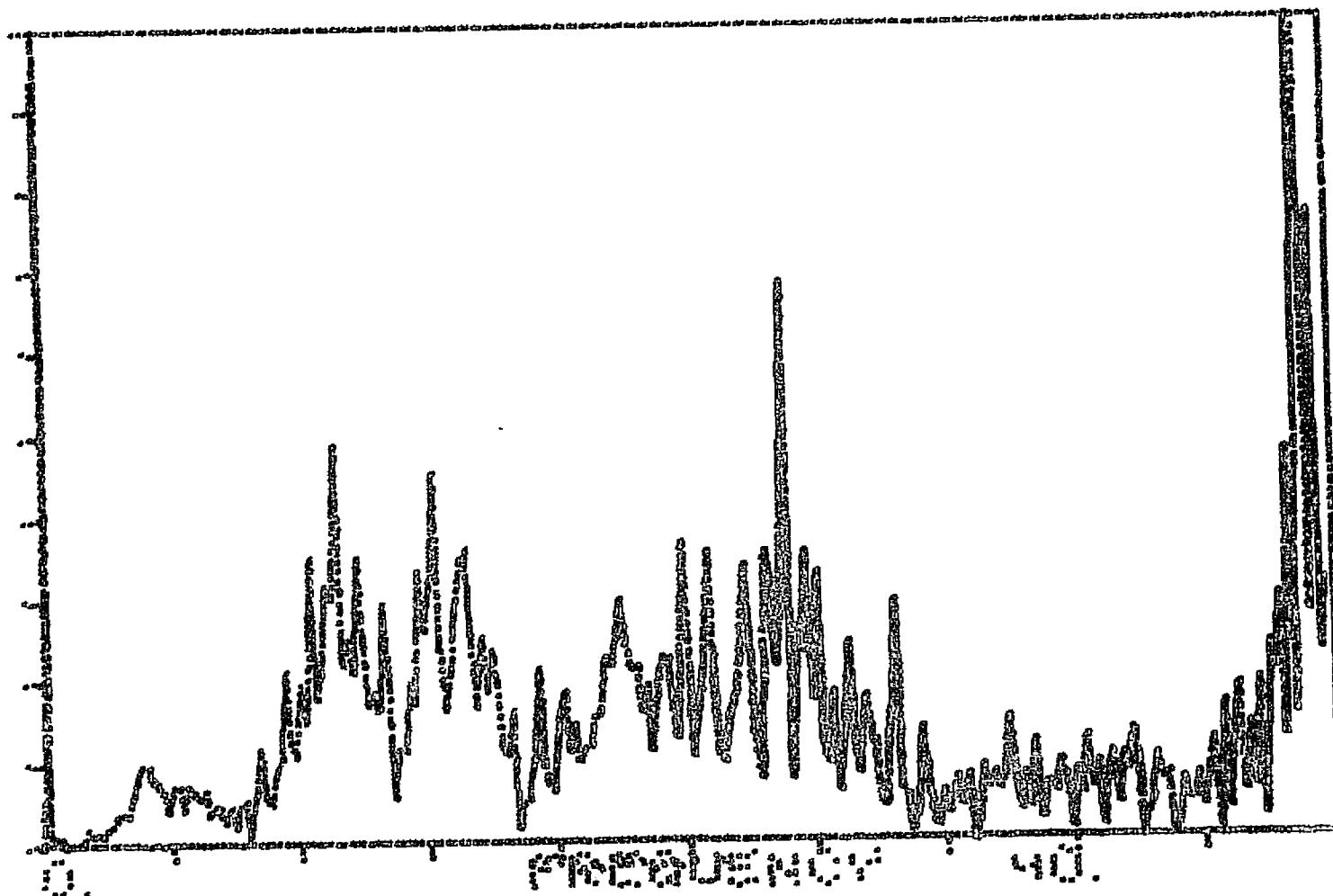
01230 250

AV2/FL1

4.

mag

0.



COMPLEX

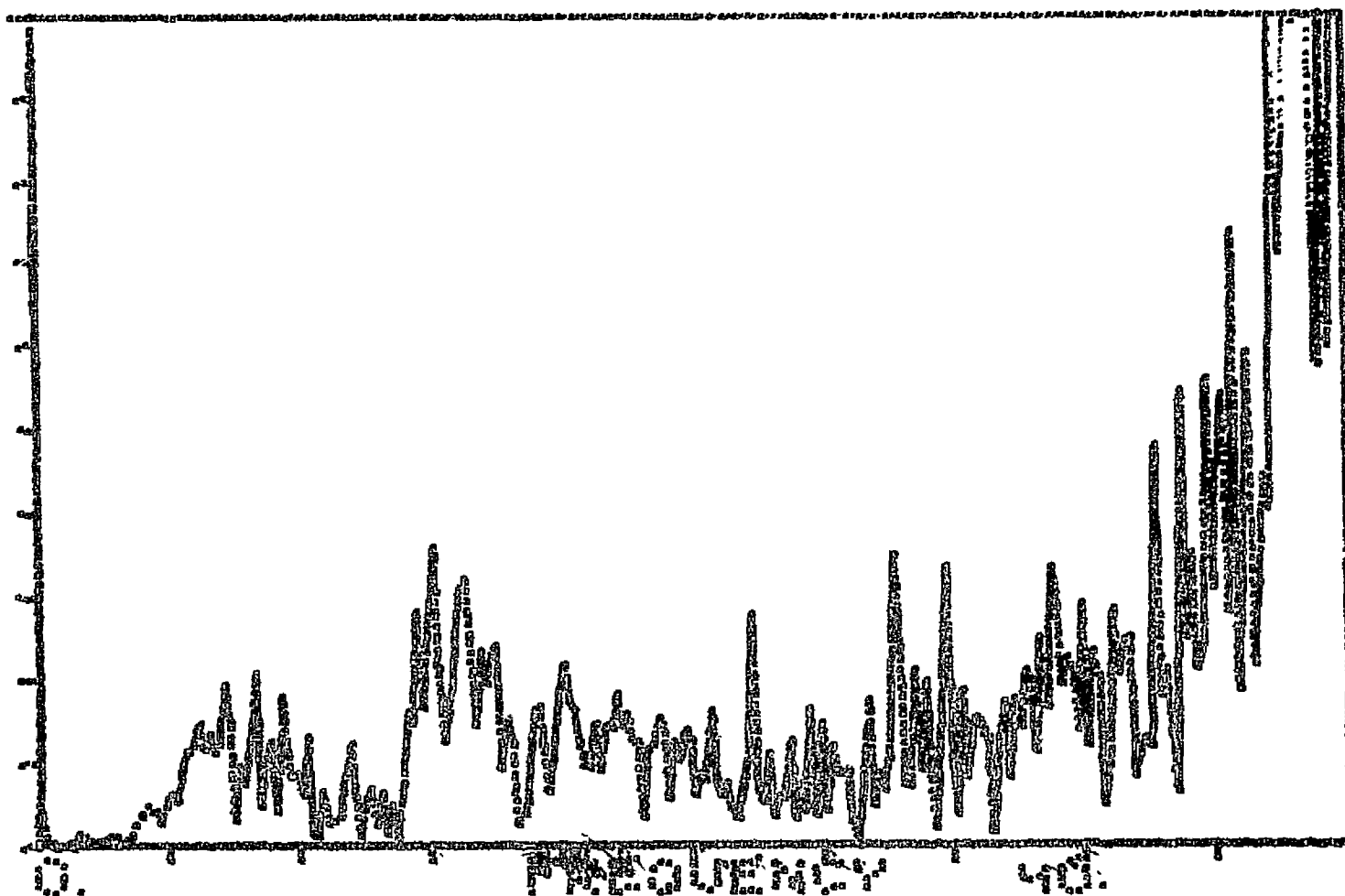
SIZE 256

AV3/FL1

4.

1964

0.

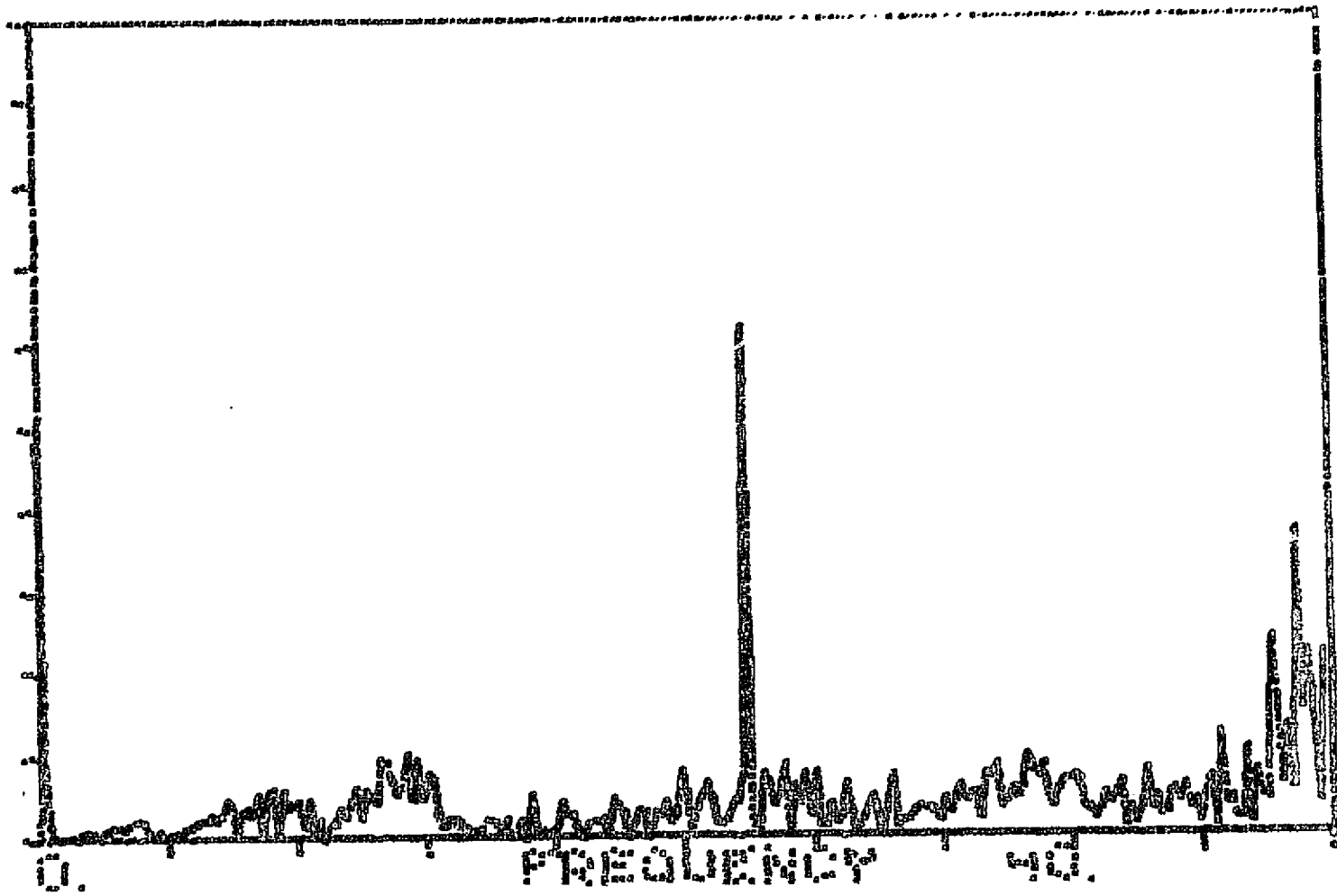


0.000000

0.000000

AV4/FL1

179014



COMPLEX

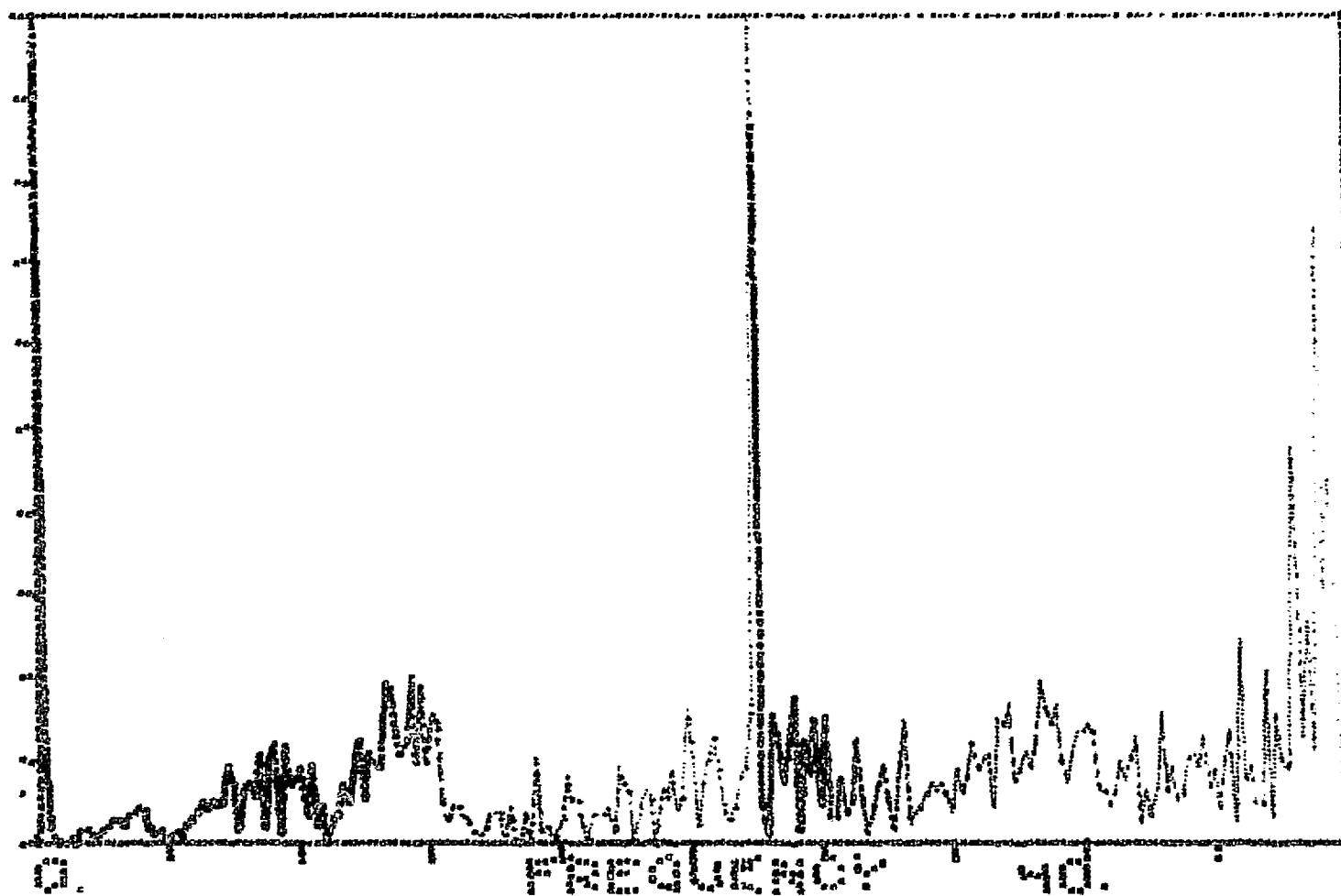
3122: 250

AV5/FL1

4.

mag

0.

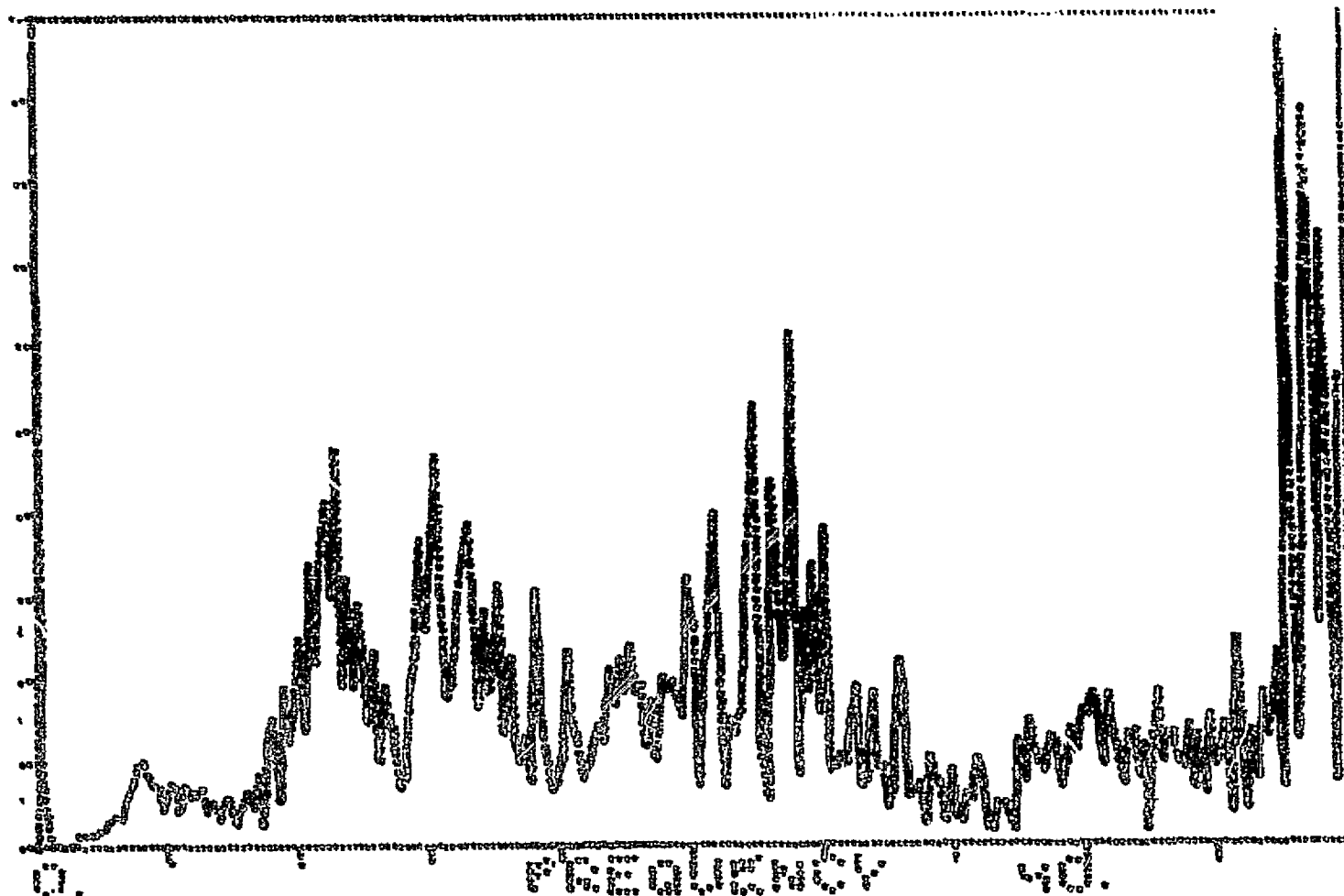


COMPLEX


















SIZE 256

AV5/FL1

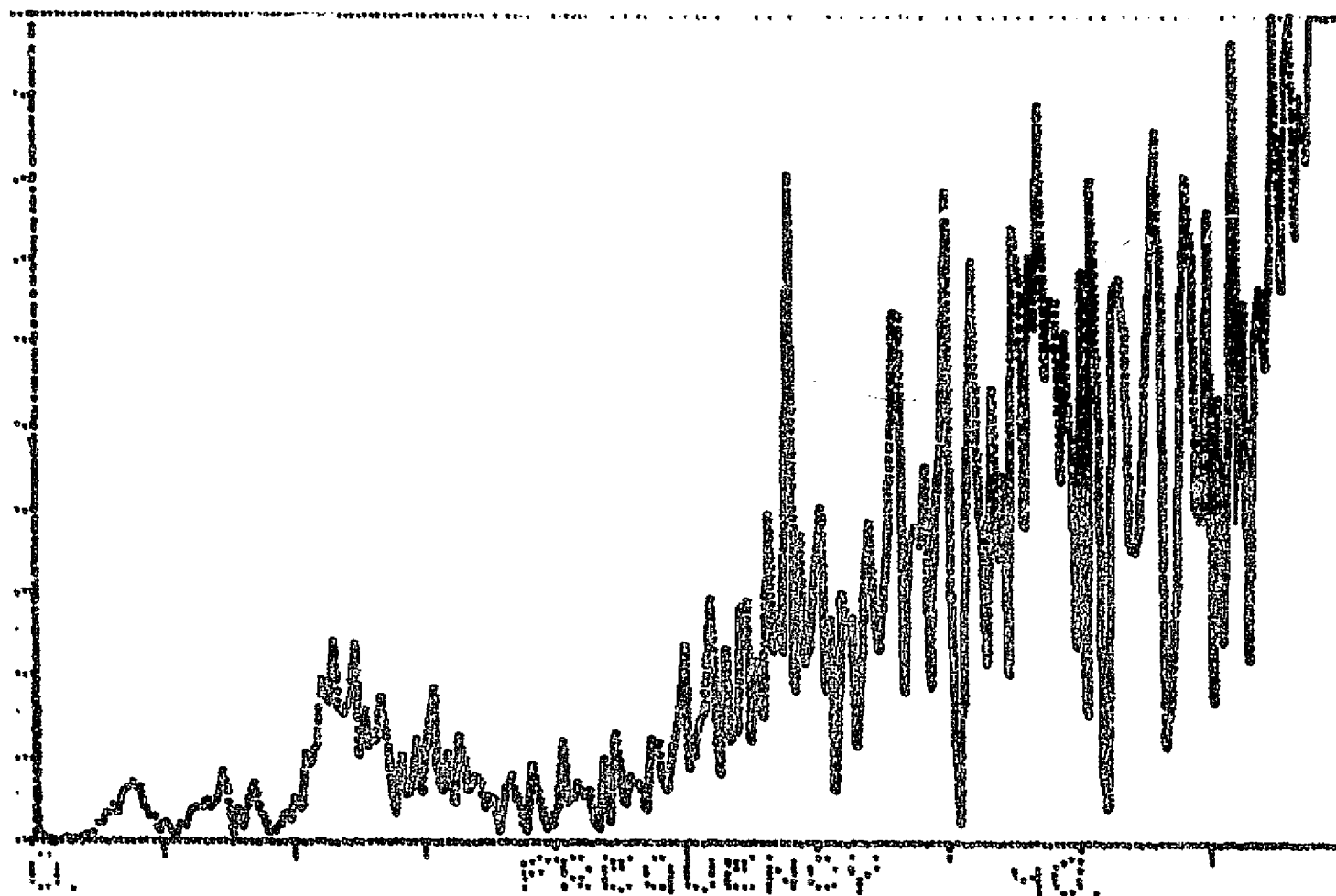
ॐ नमो भगवते वासुदेवाय ॥



SECRET

AV6/FL1



COMPLEX

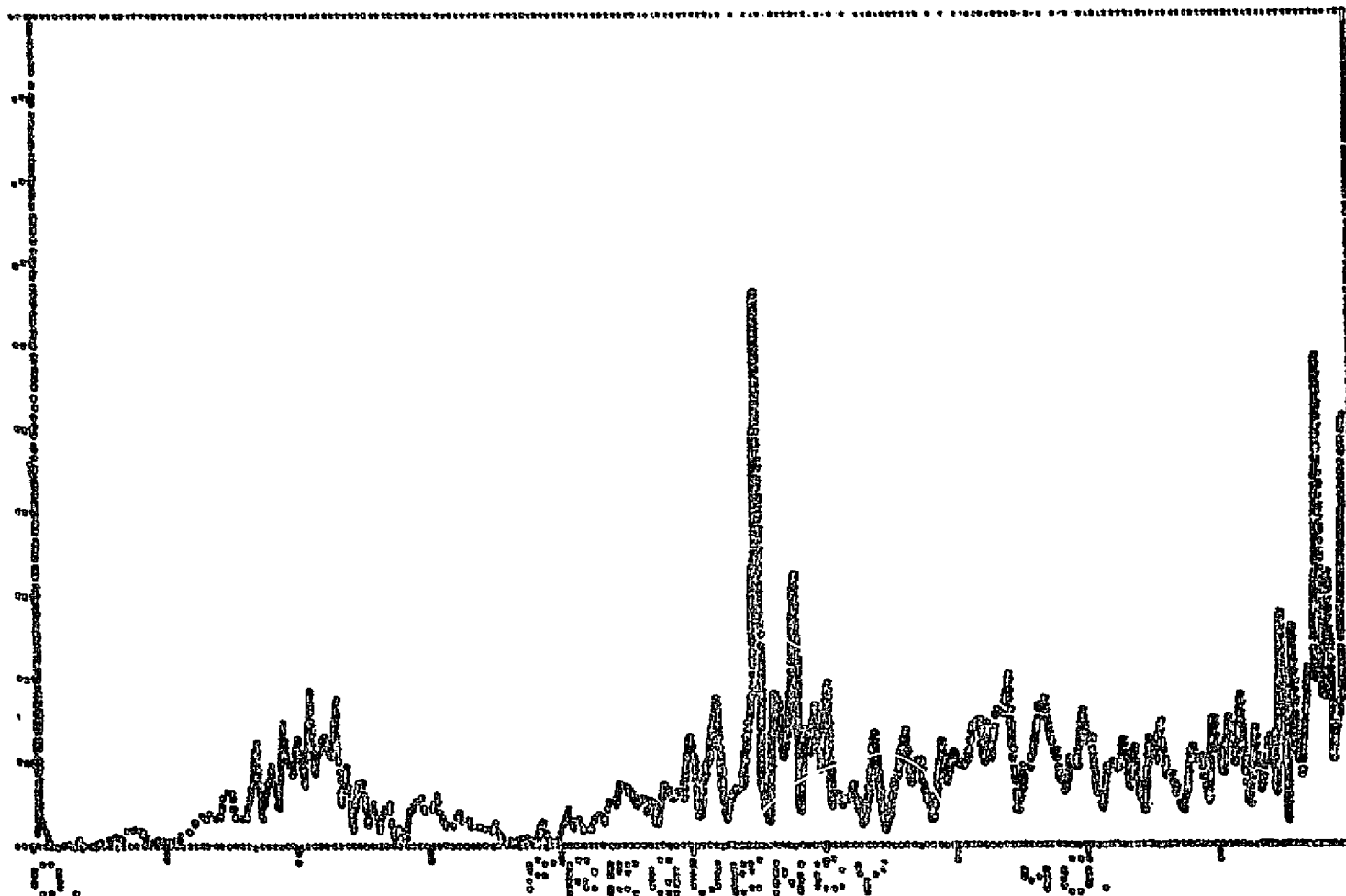
8138 250

AL1/FL1

2

FORM

0



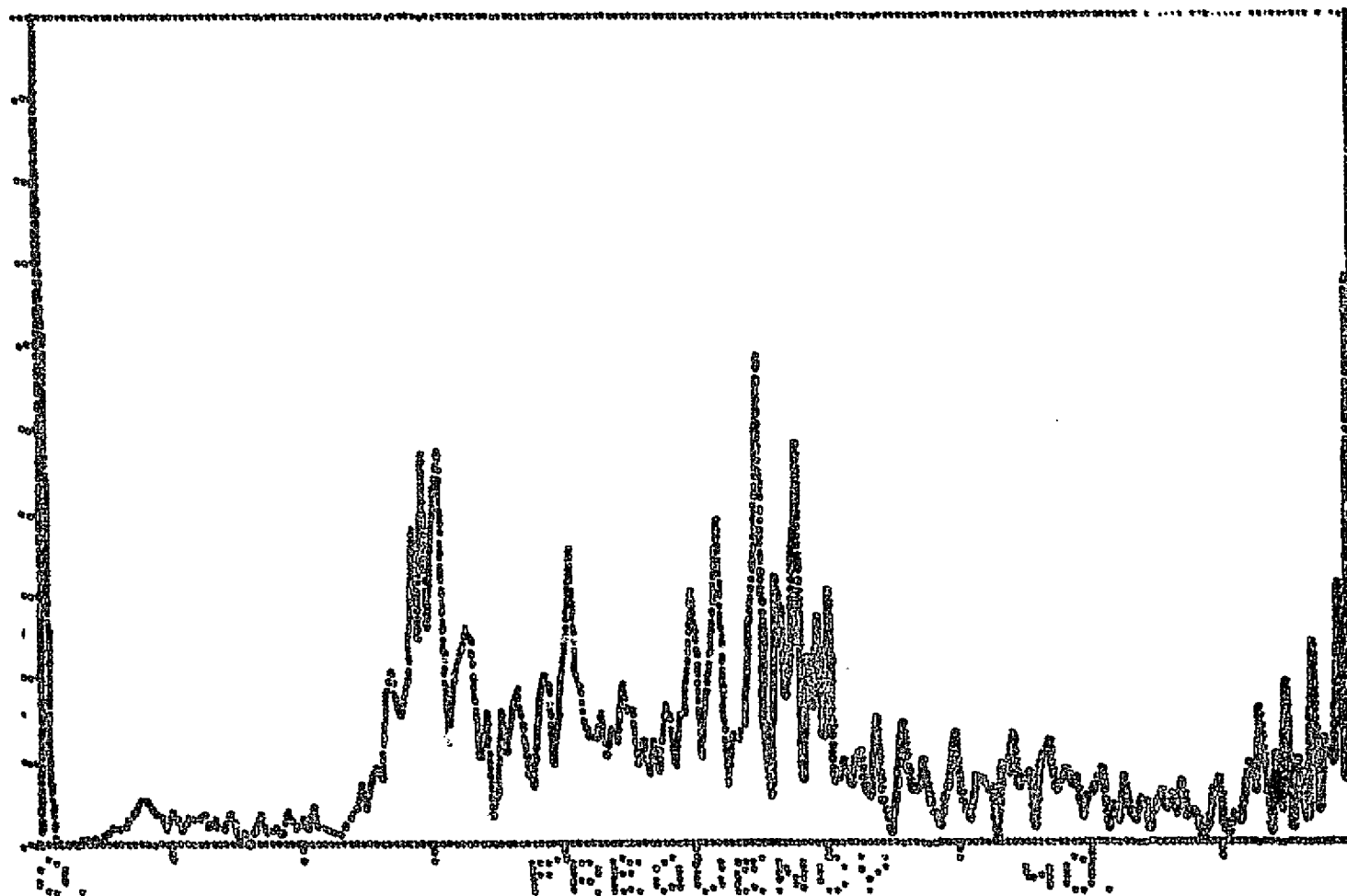
COMPLEX

0.000 0.000 0.000

3.

174618

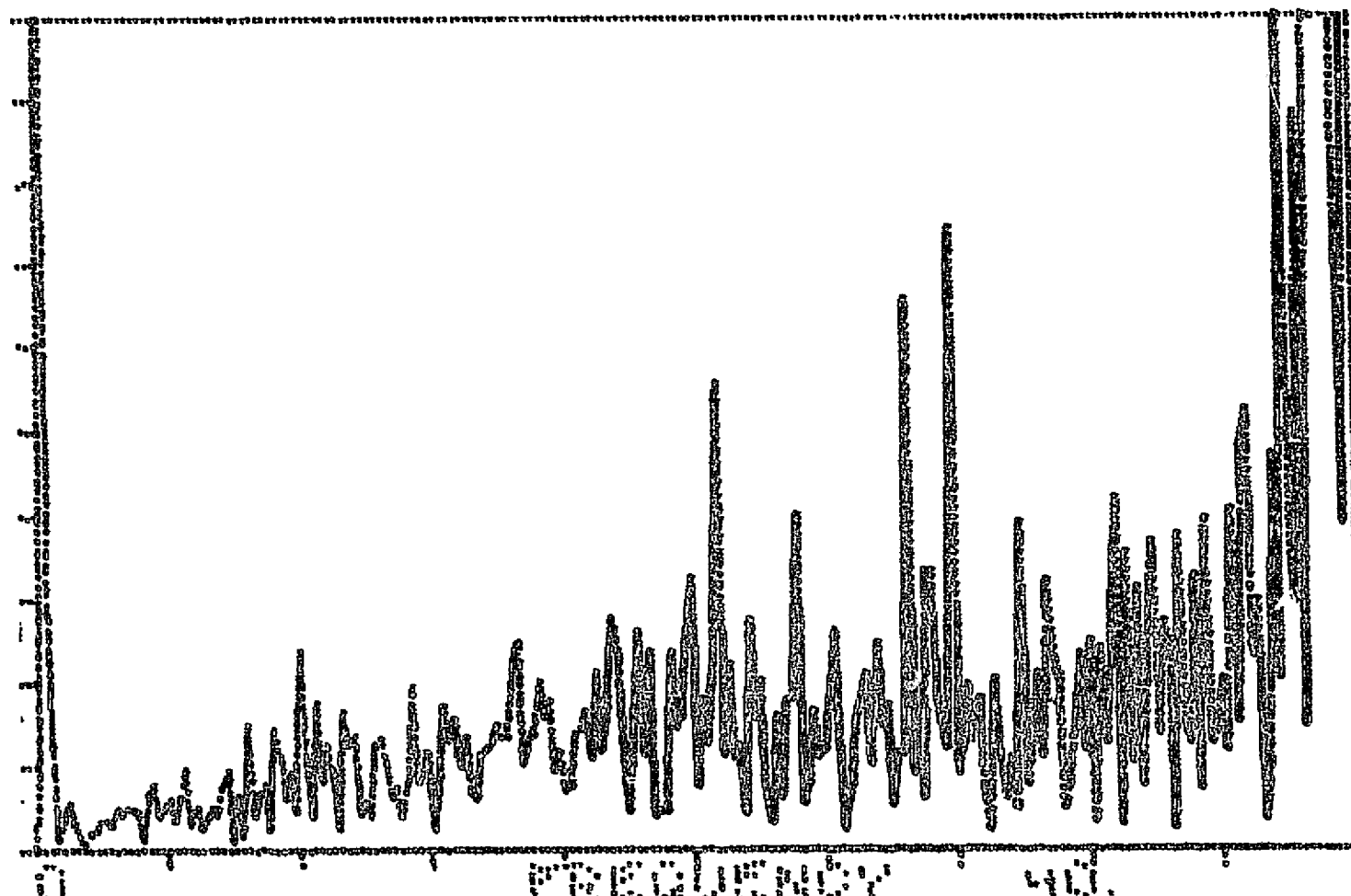
0.



COMPLEX

0128- 250

AL3/FL1



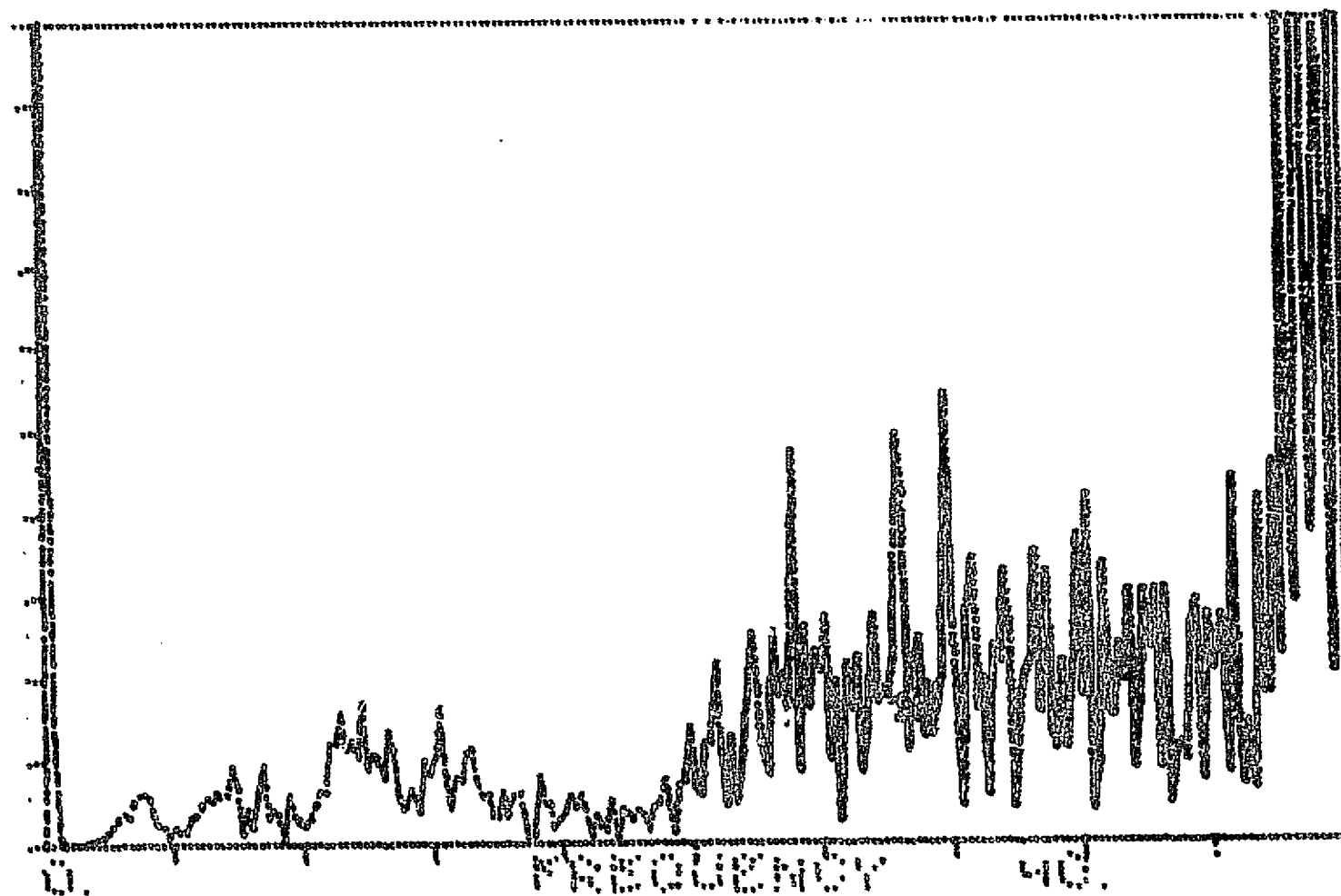
COMPLEX

SIZE 256

AL6/FL1

2.

MA6H



COMPLEX

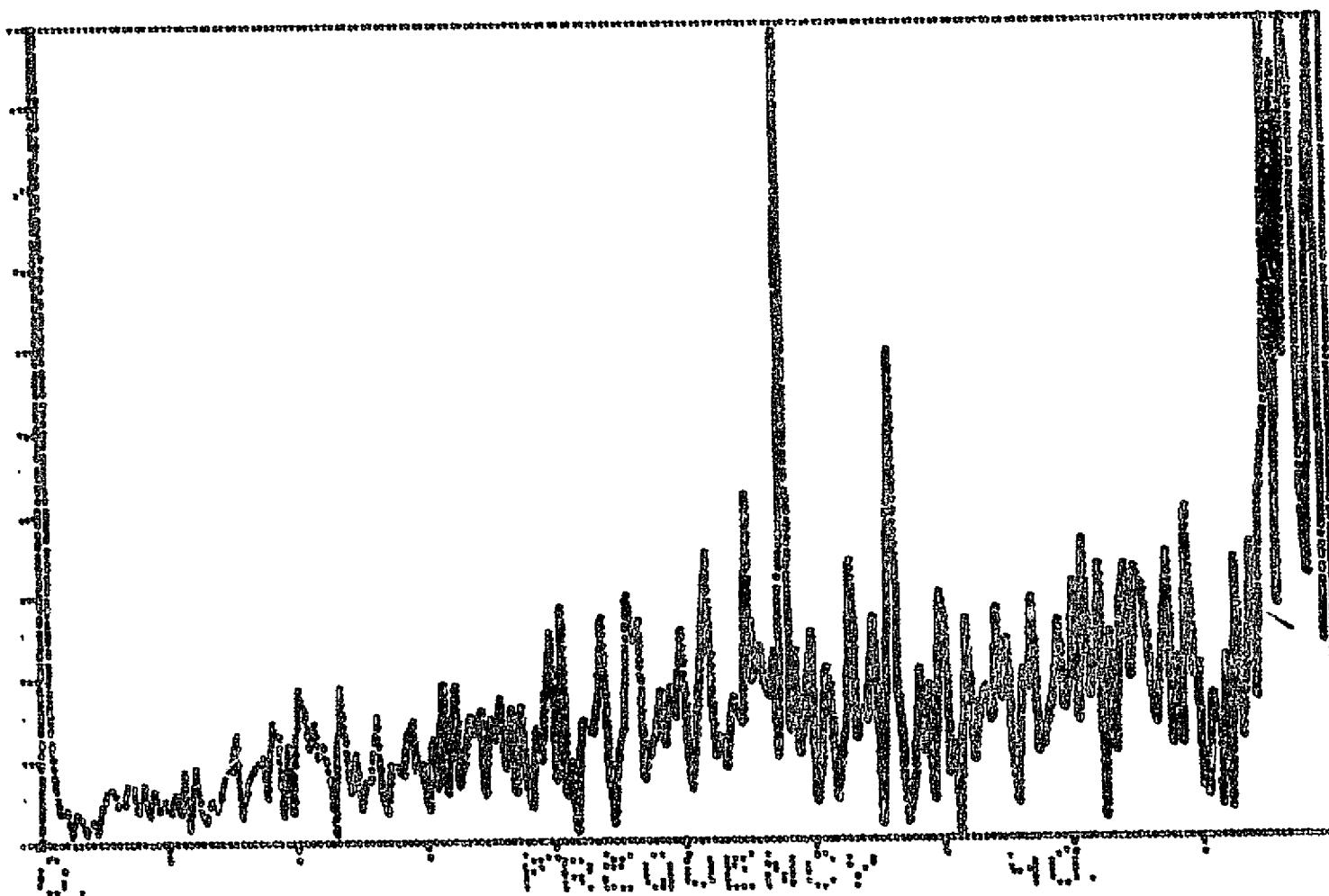
SIZE= 256

AL7/FL1

10.

MAGN

0.



COMPLEX

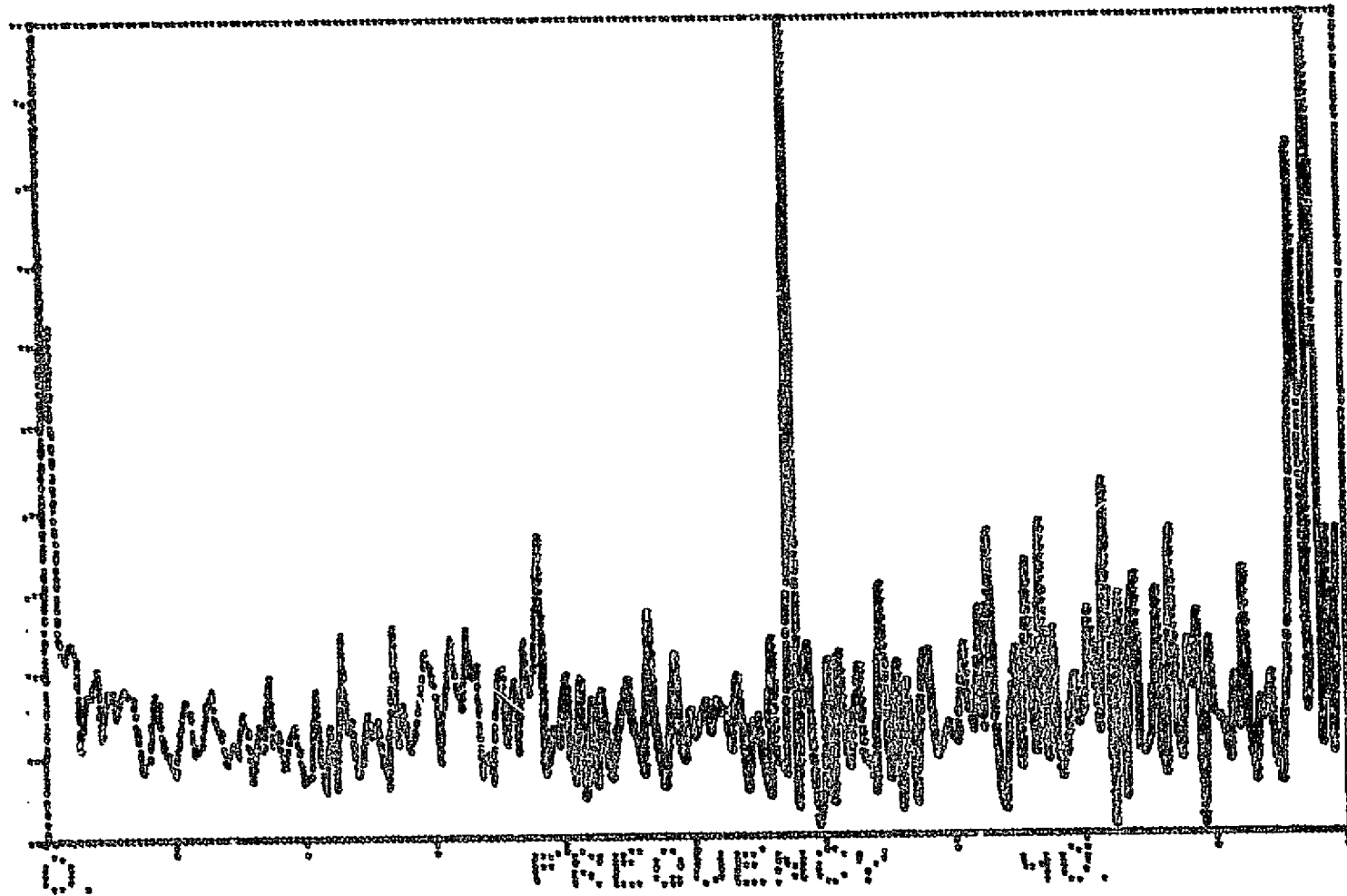
SIZE= 356

AL11/FL1

20.

mach

20.

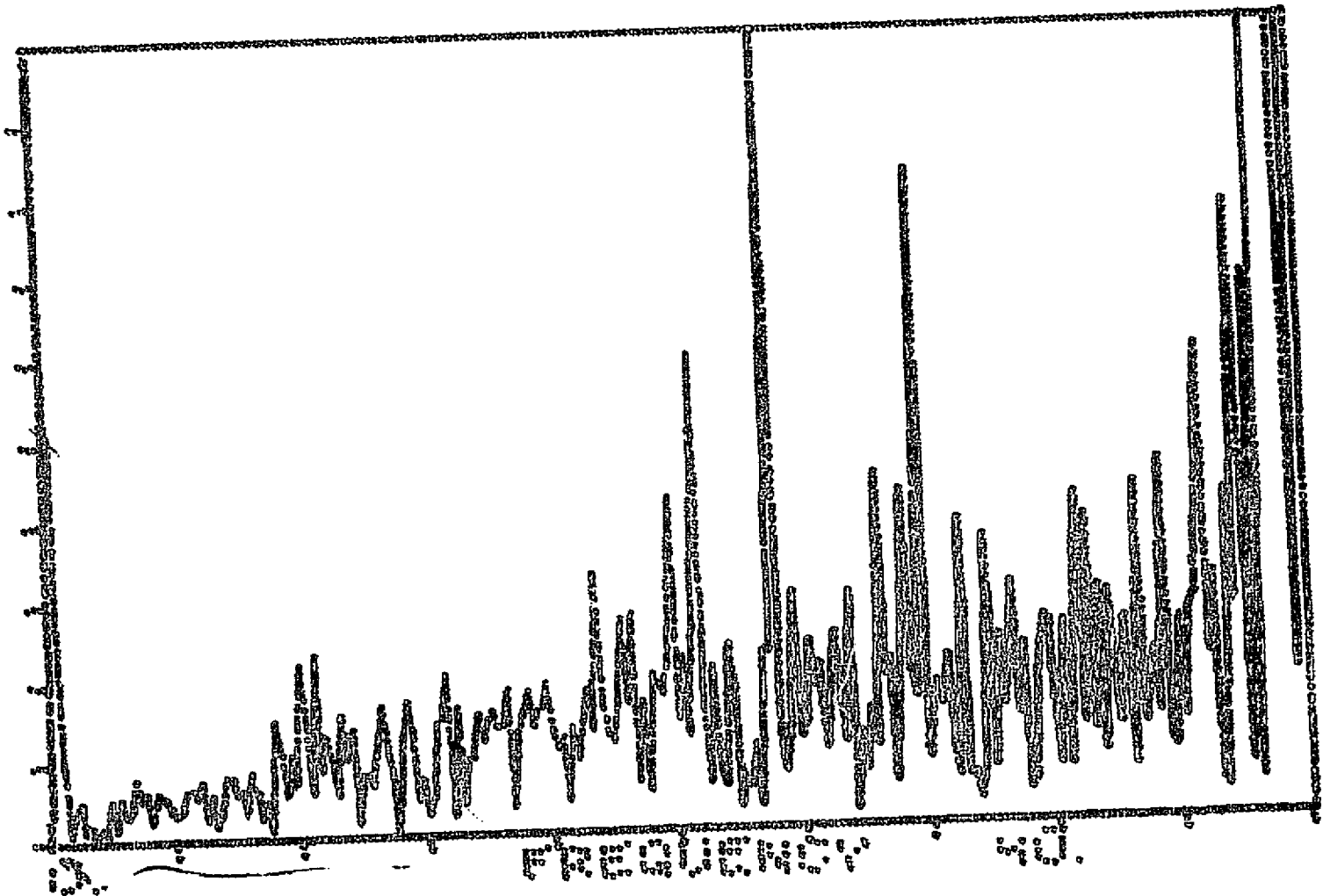


0. FREQUENCY 40.
COMPLEX SIZE 256

$\Delta P/FL1$

10.

10.00



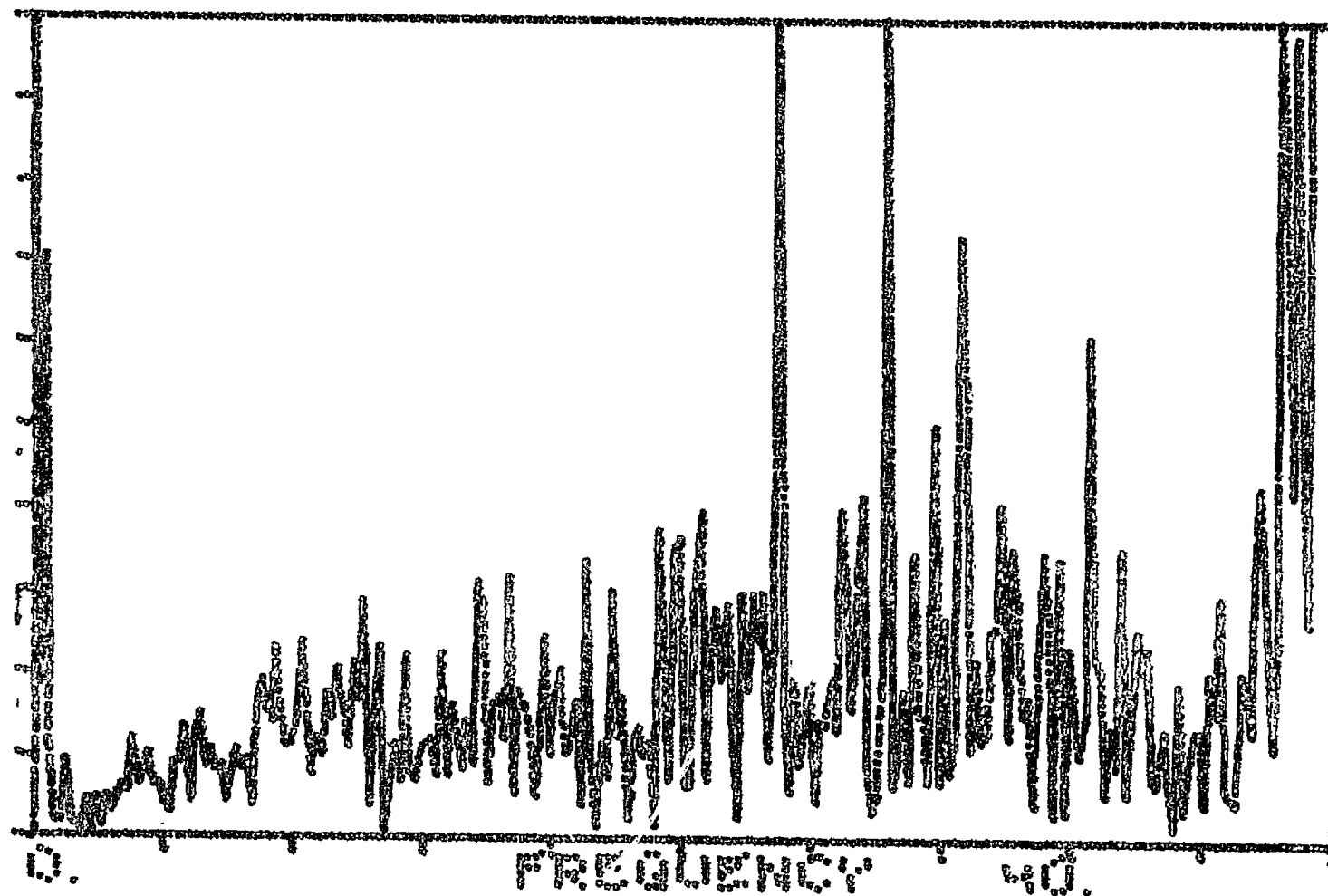
COMPLEX SIZE 256

AL4/FL1

10.

11000

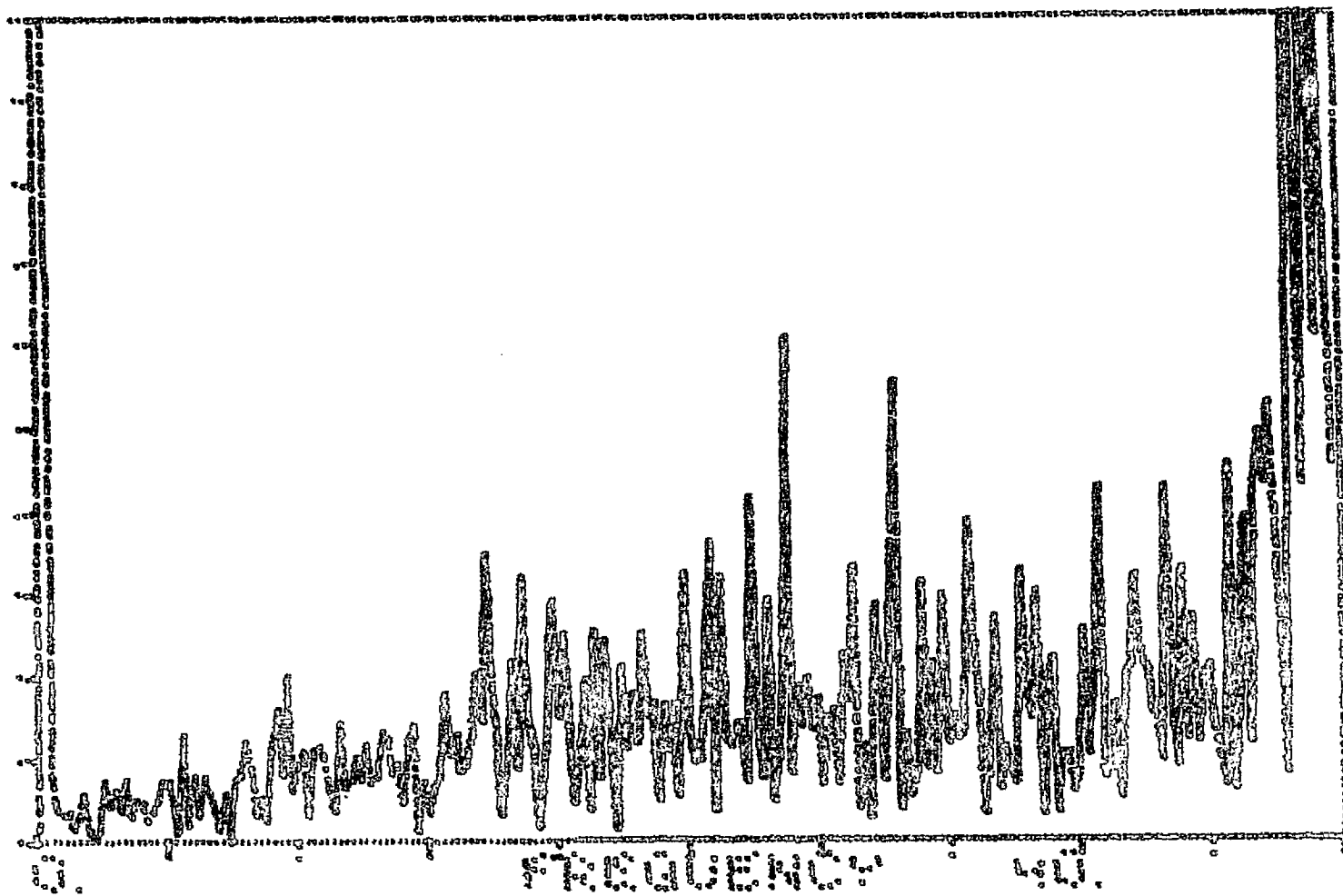
11.



COMPLEX

SIZE: 350

AL5/FL1



0.000000

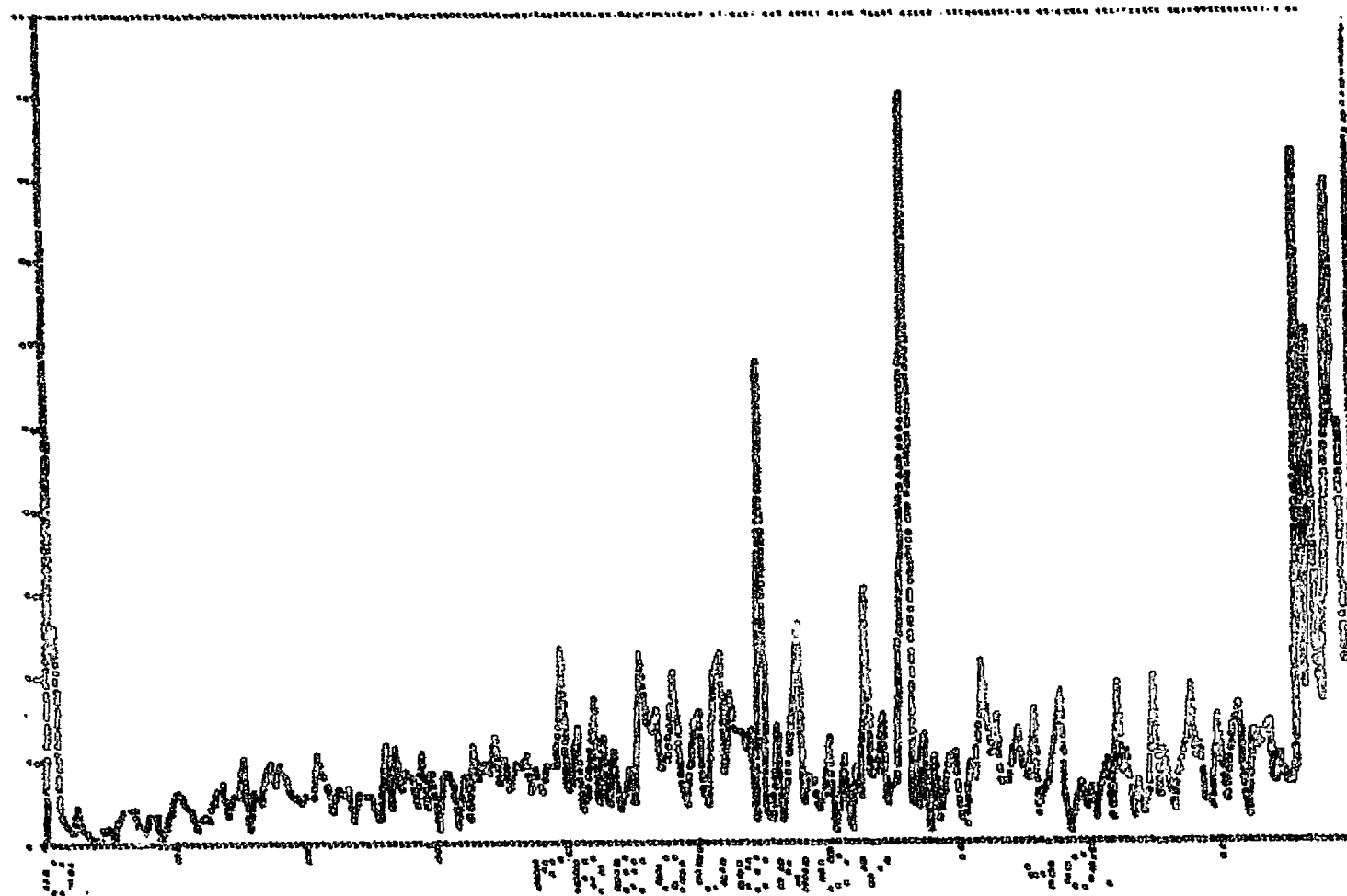
0.000000

AL8/FL1

20.

1964

0.



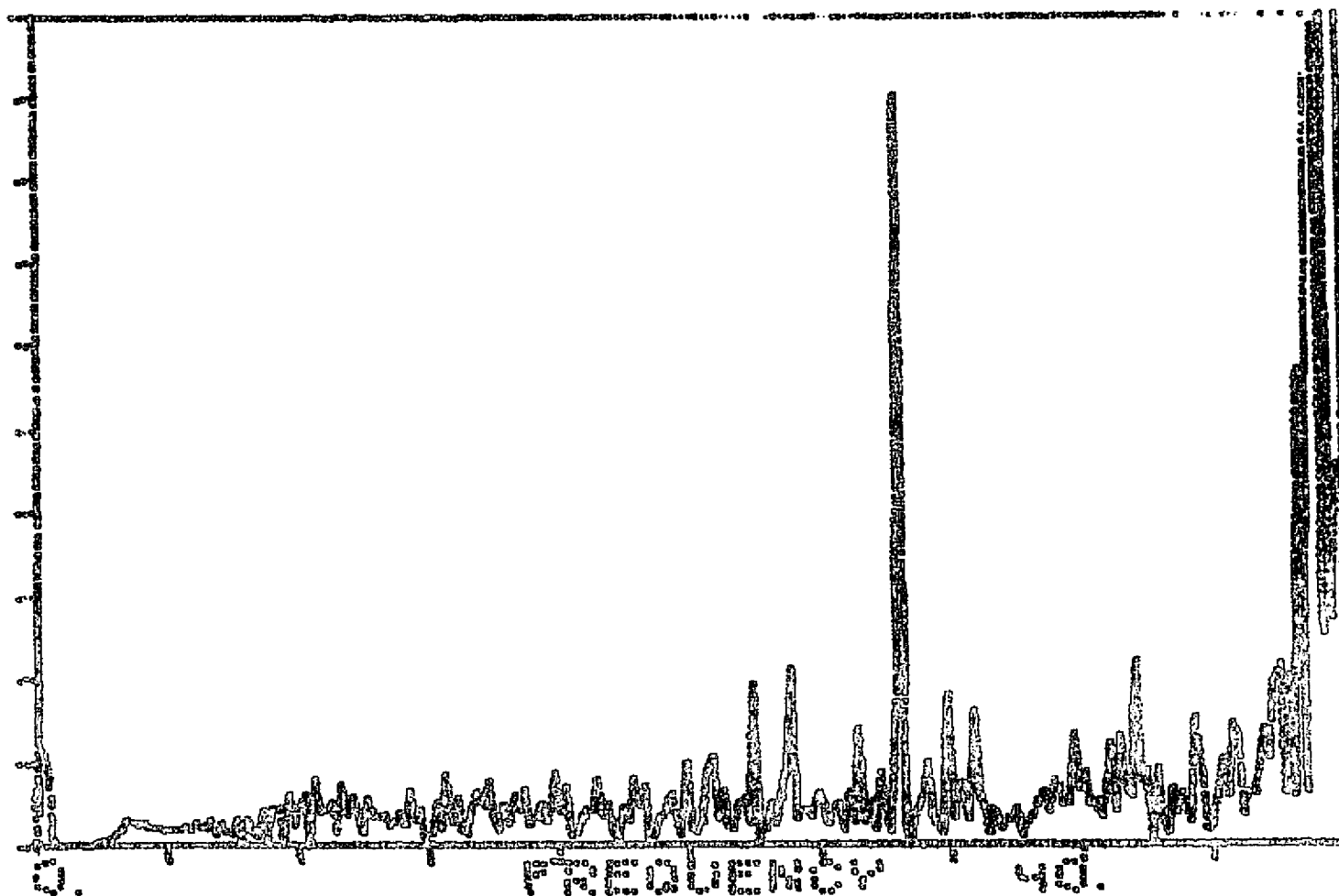
COMPLEX

SIZE 256

00

100

00



COMPUTER

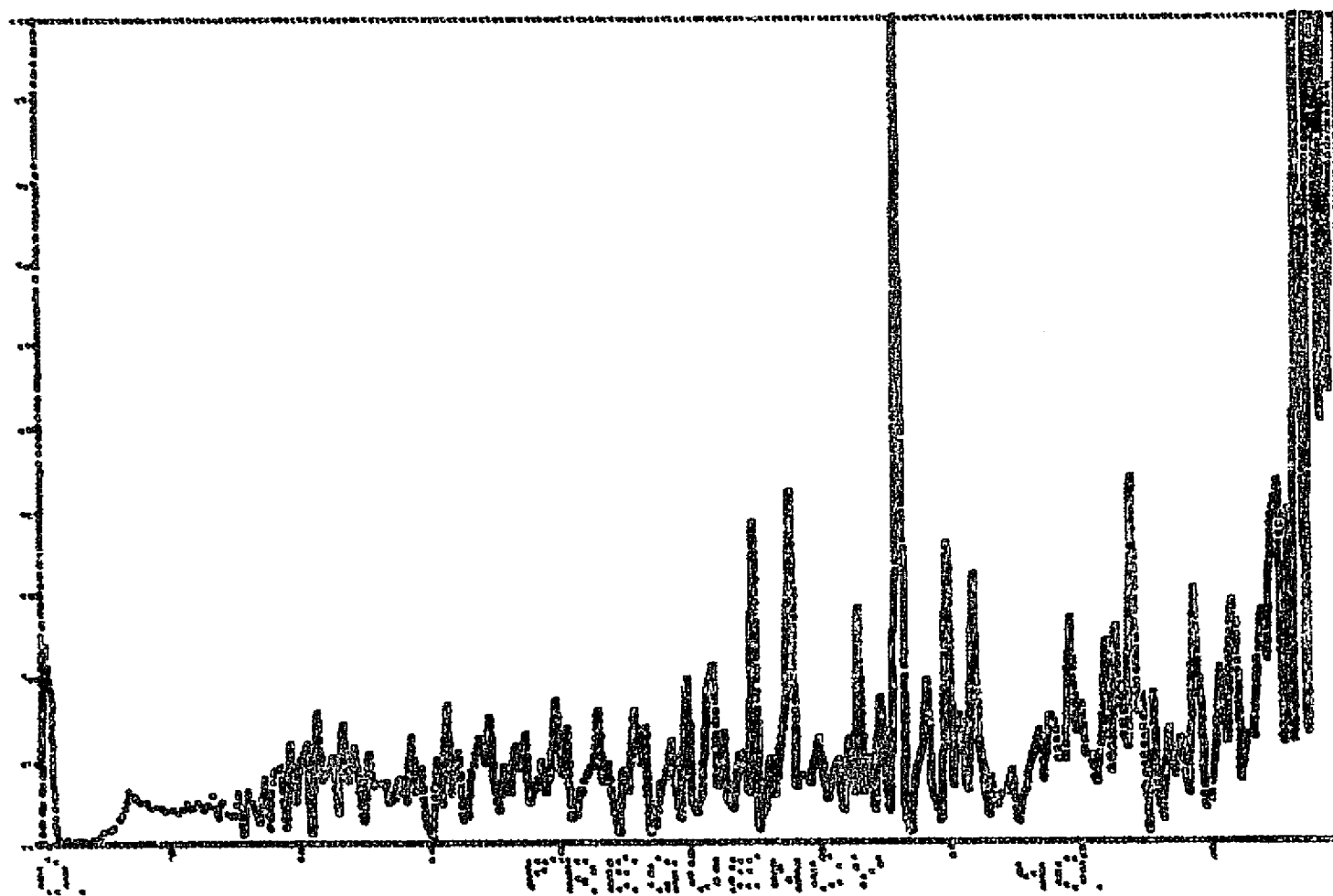
0123 235

AL10/FL1

10.

196M

0.



COMPLEX

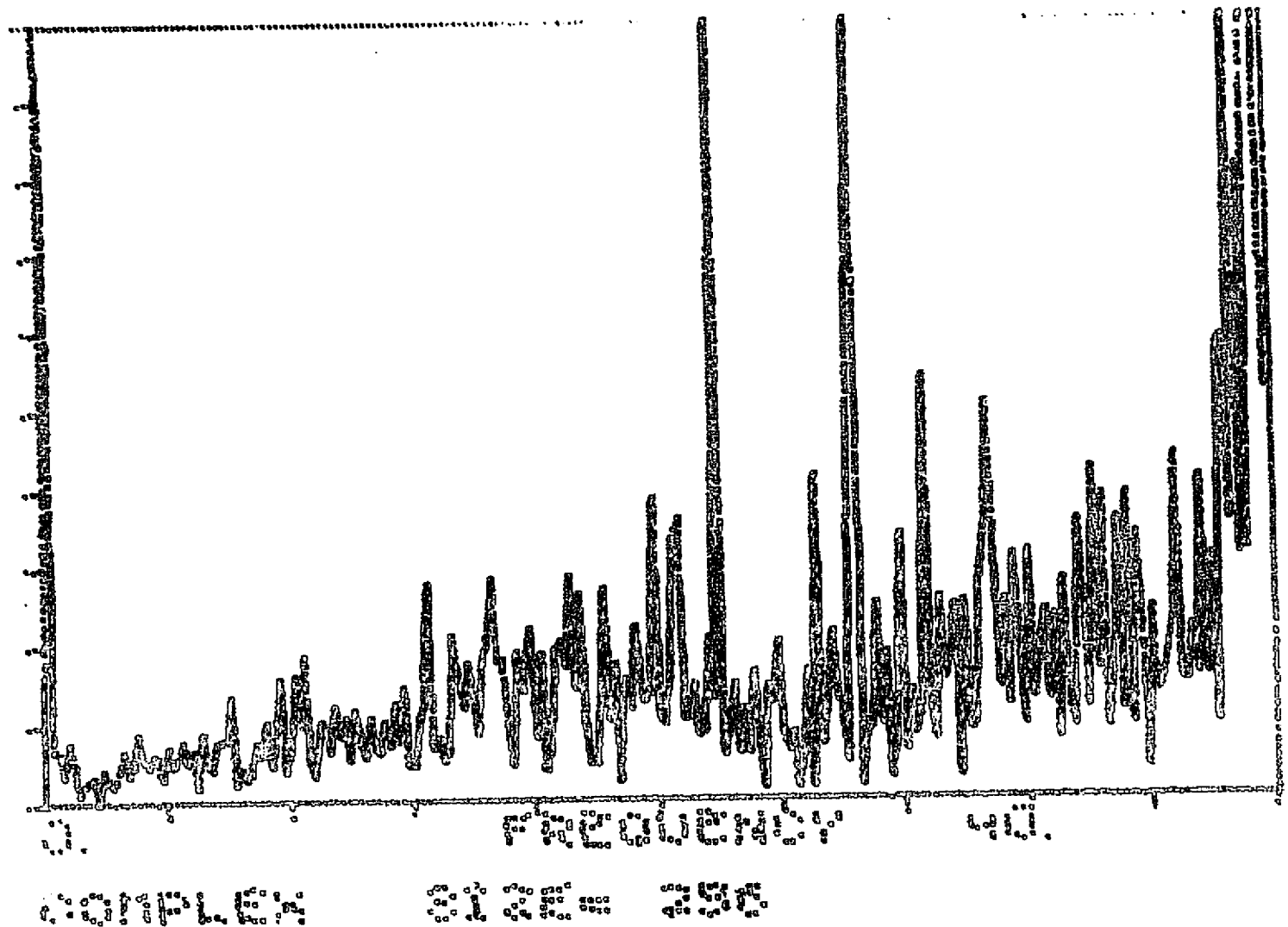
01234 050

AL10/FL1

10.

1962

0

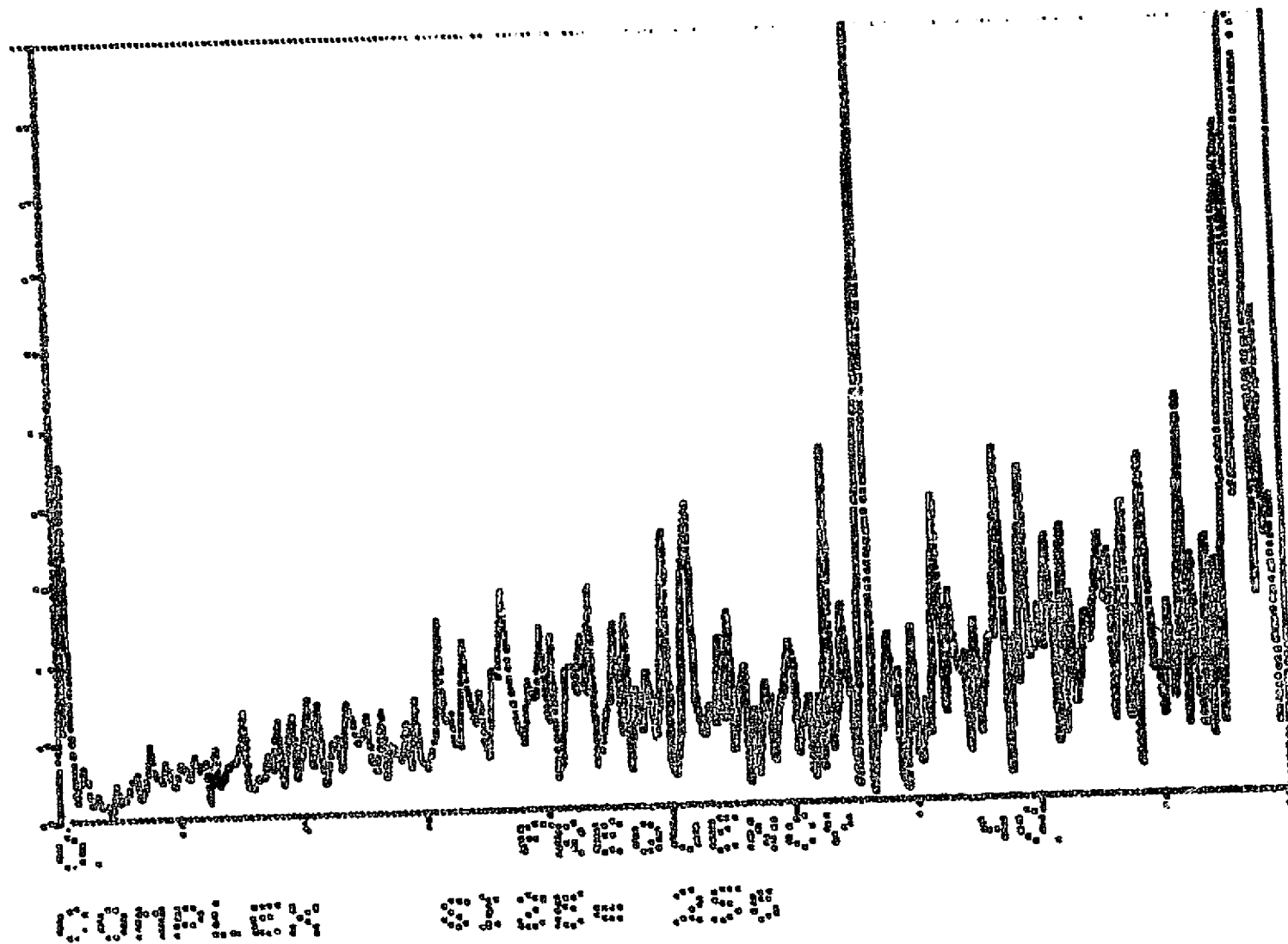


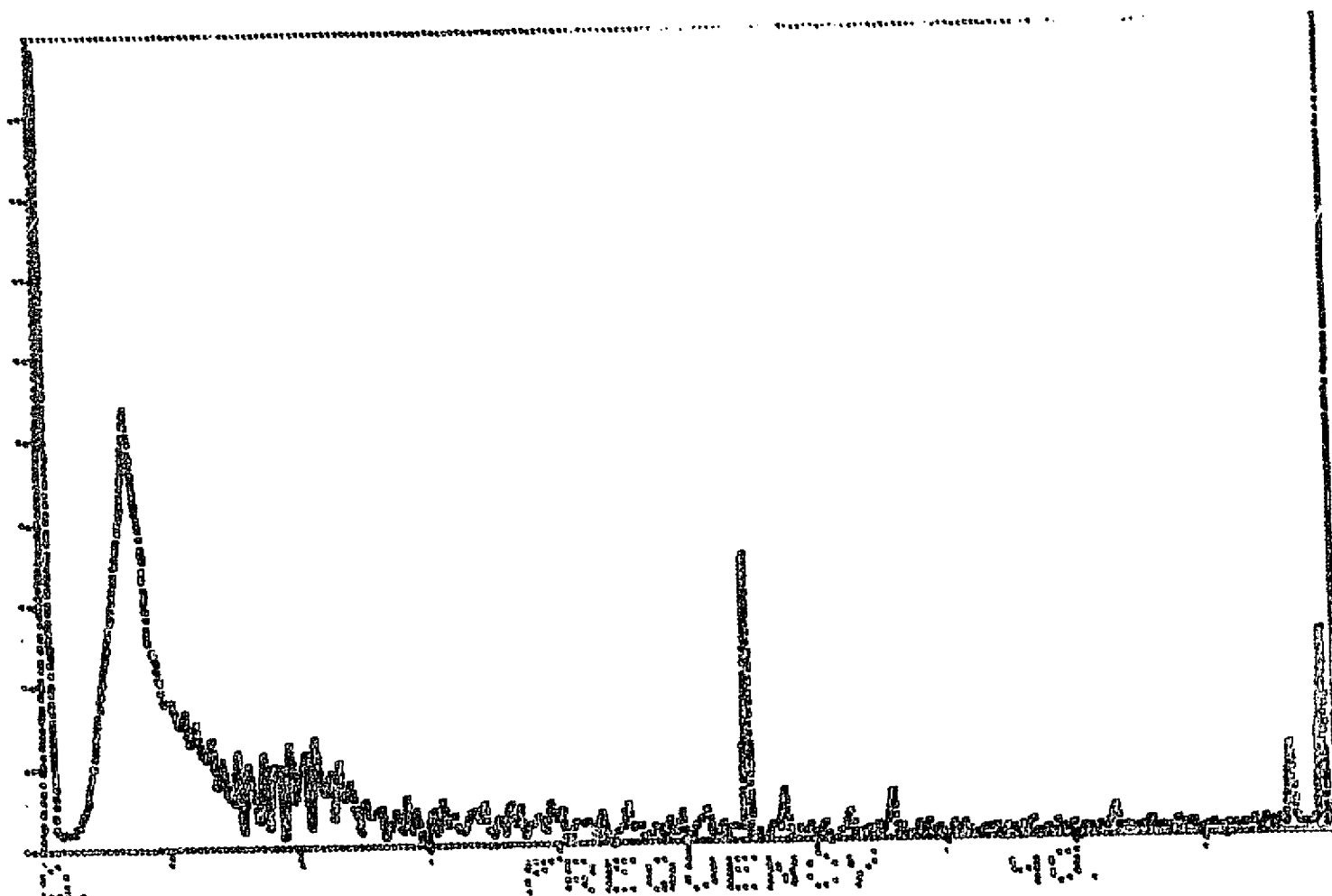
AL12/FL1

40.

40.000000

40.





COMPLEX

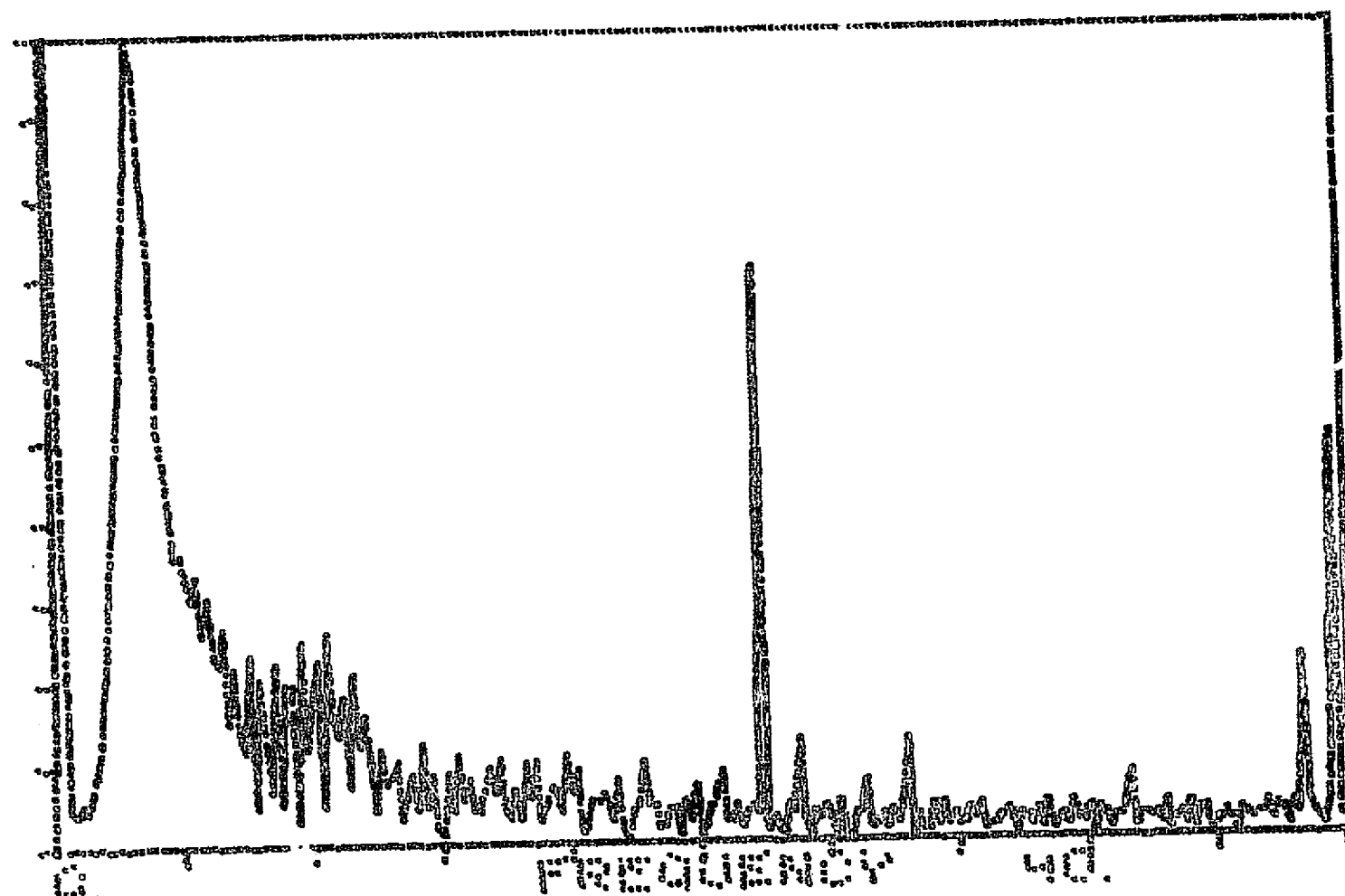
SIZE= 256

DL1/FL1

4.

1000

0



COMPLEX

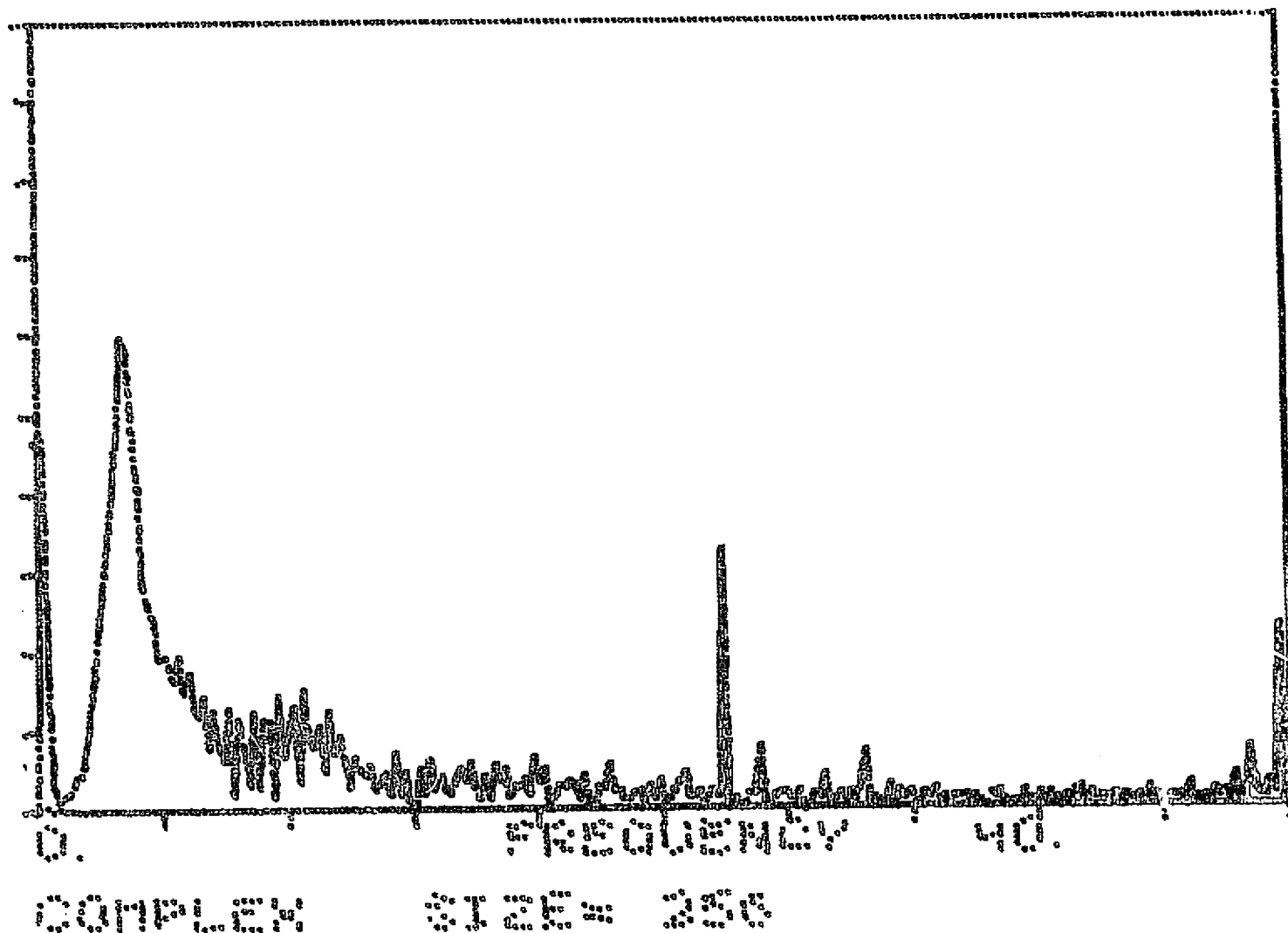
SIZE = 356

DL1/FL1

2.

1980

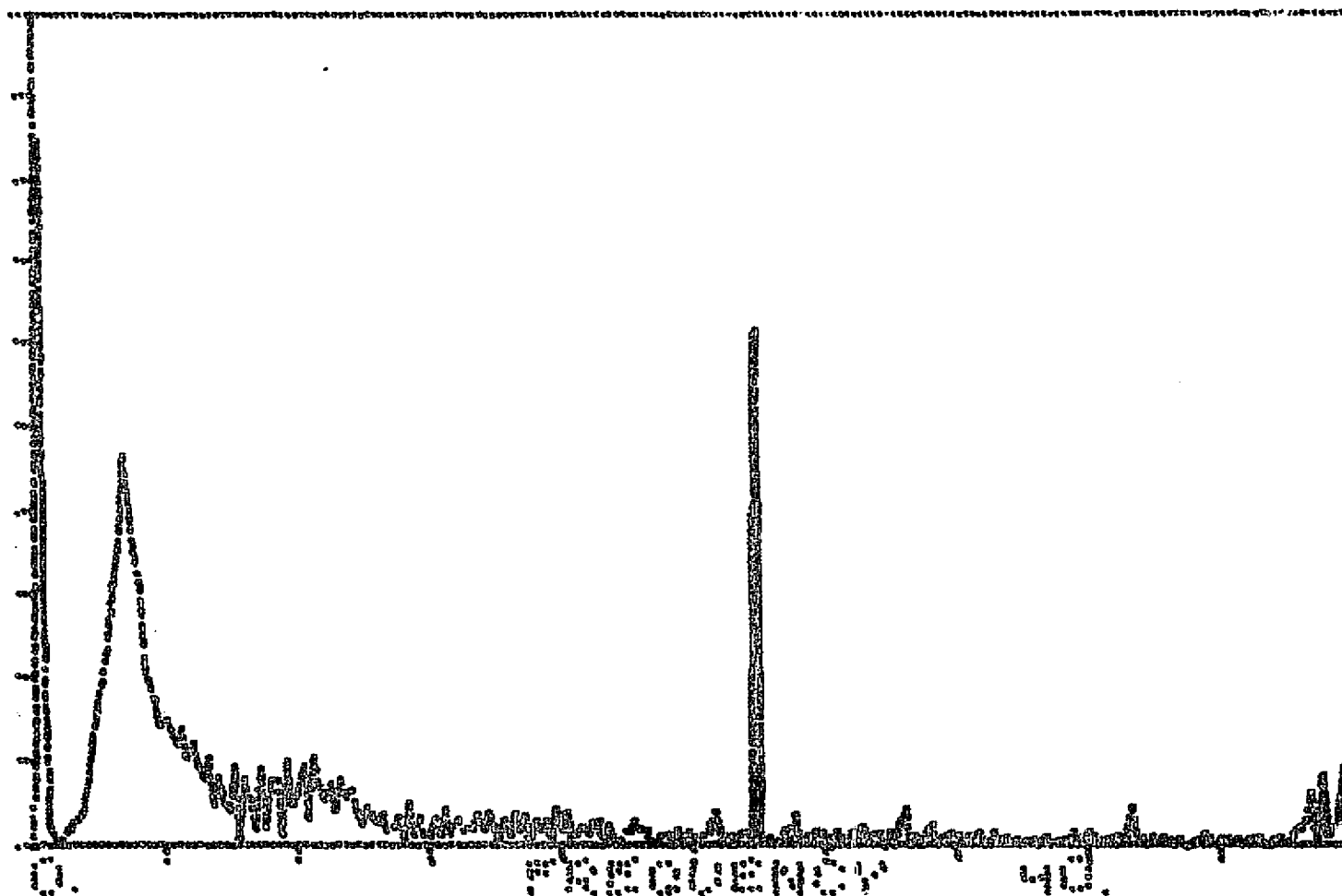
0.



1.

1963

0.



COMPLEX

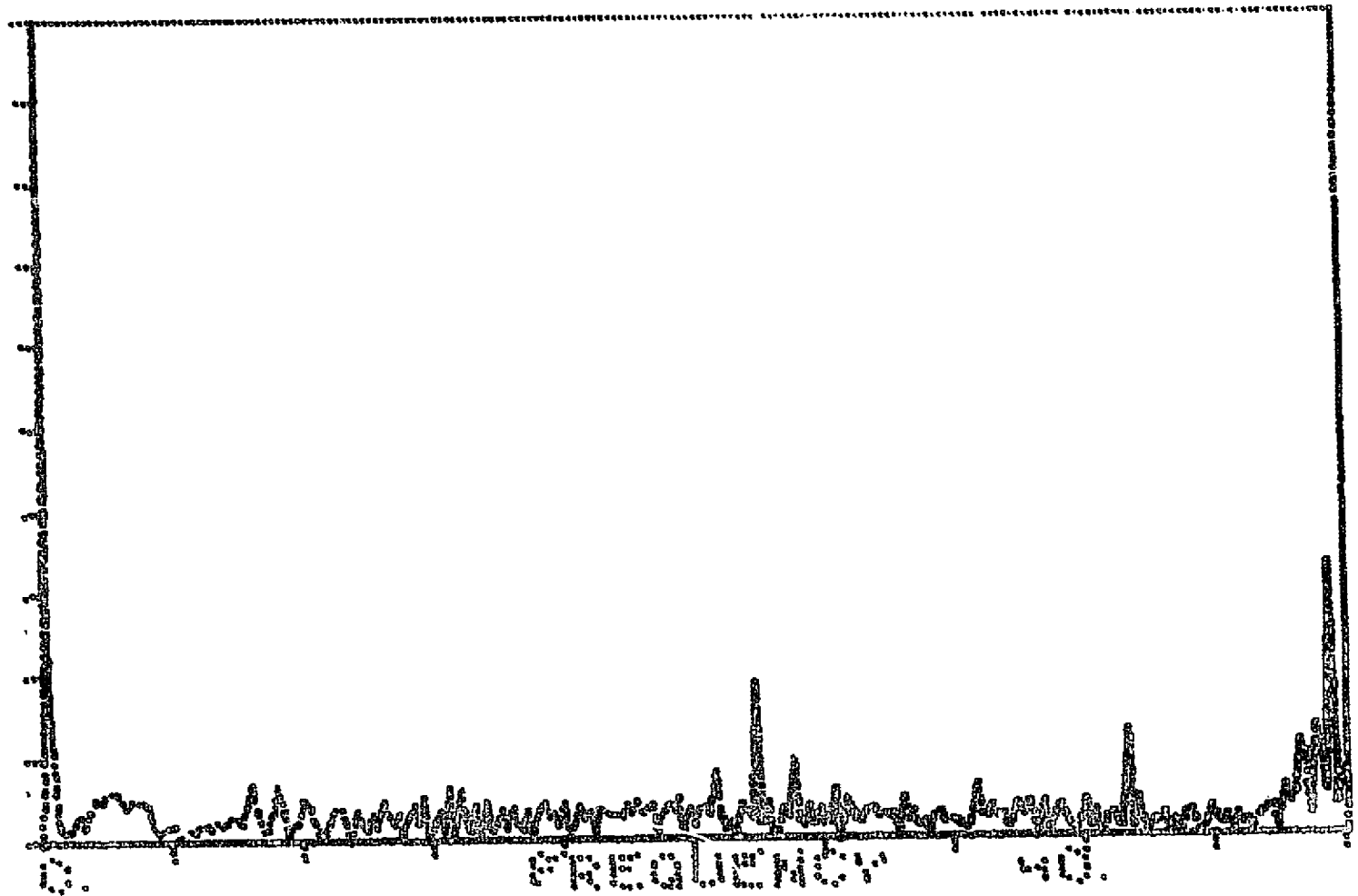
SI 2E 256

DL3/FL1

5

11:00 AM

2



CORPUS

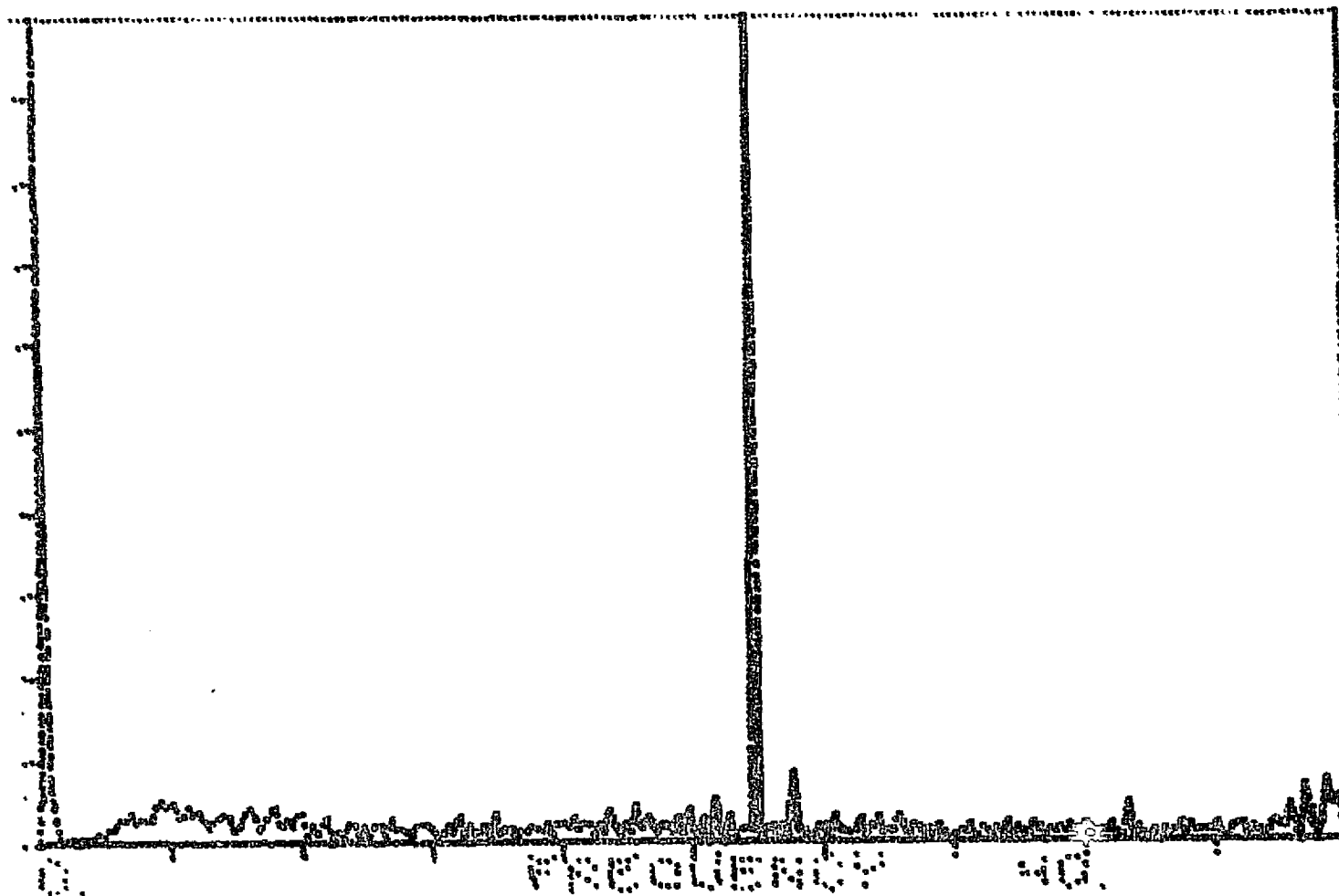
SIZE: 255

DL4/FL1

1.

mgm

0.



COMPLEX

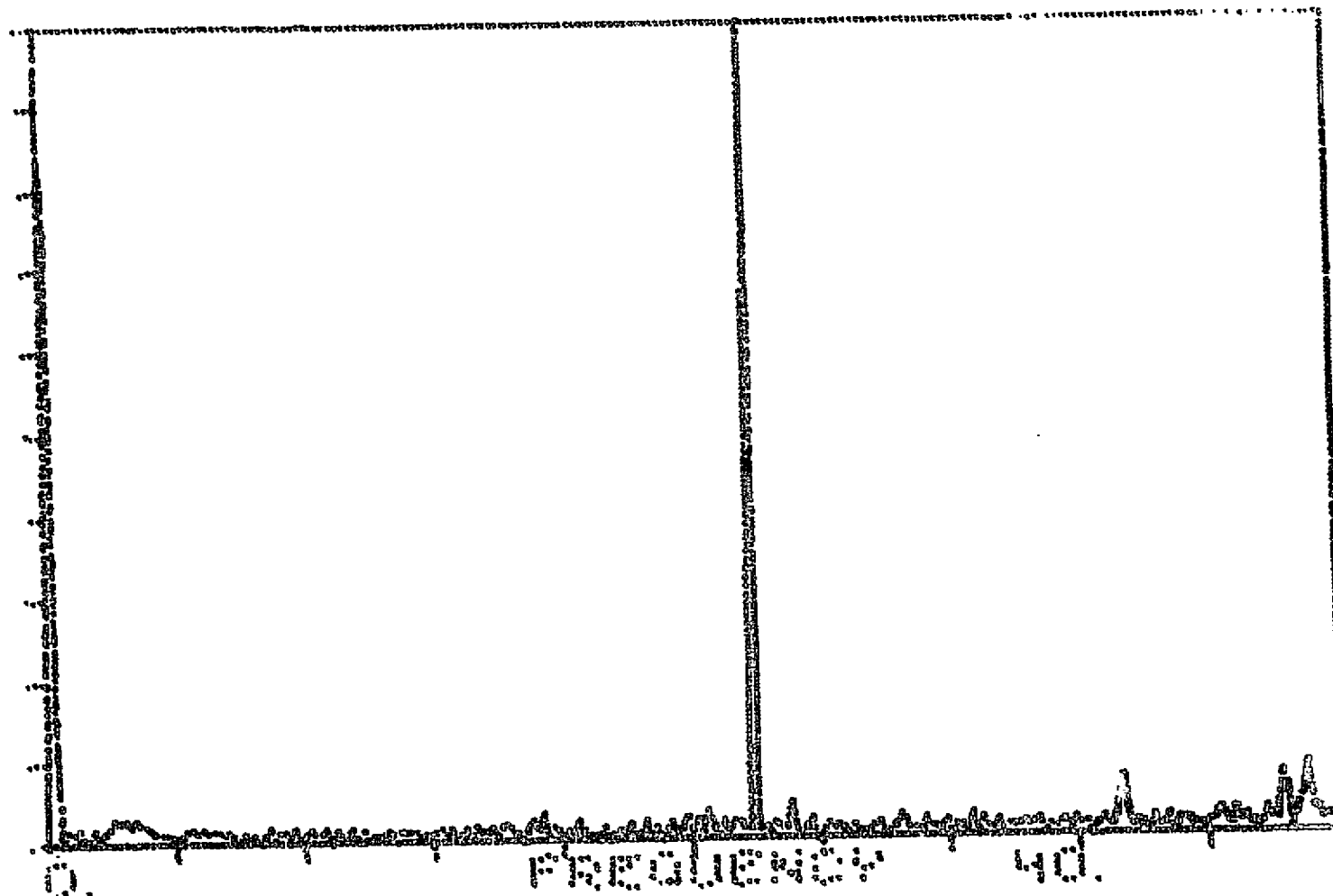
SIZE 256

DL5/FL1

1.

mag

0.



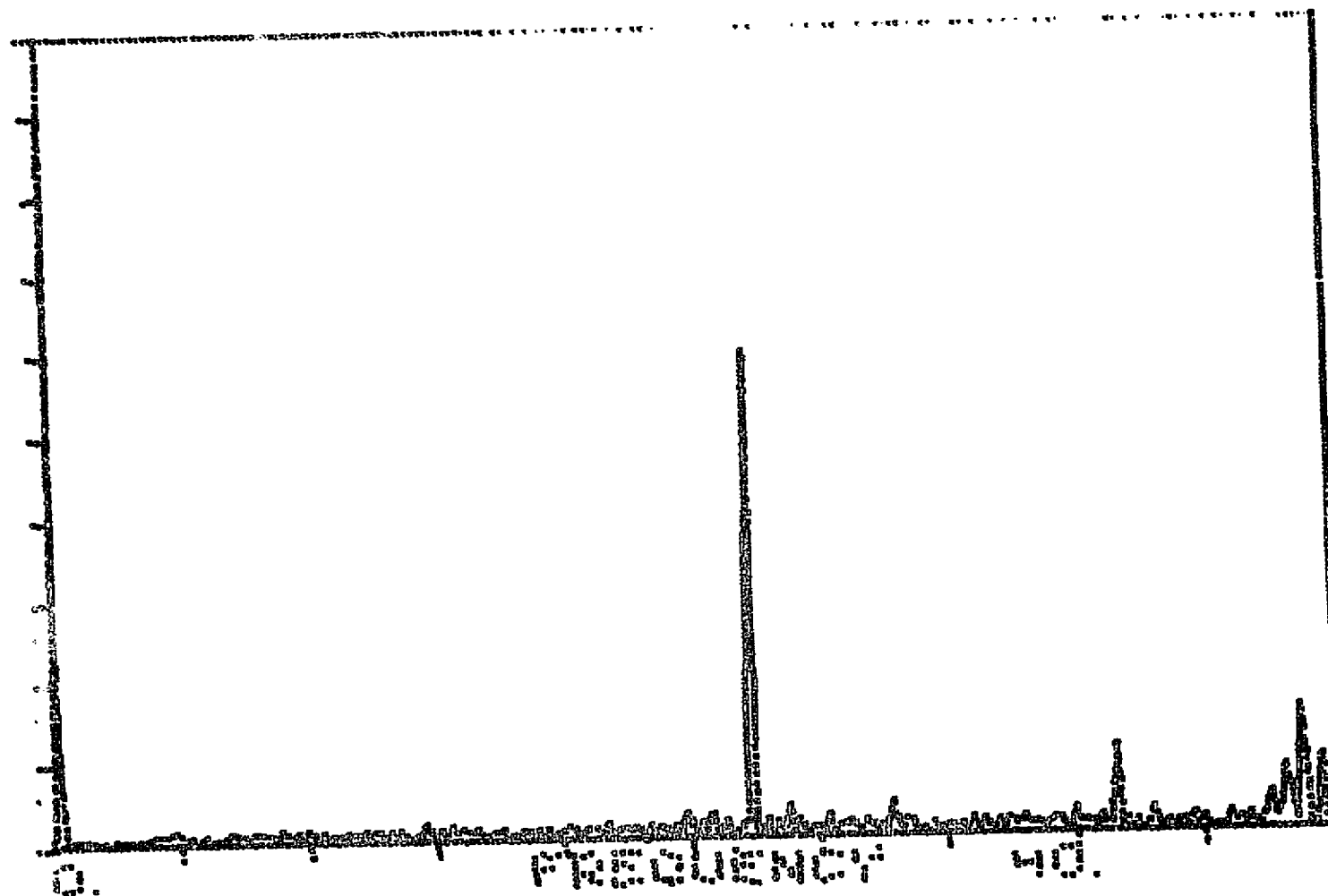
COMPLEX

SIZE = 255

DL6/FL1

1.

1964



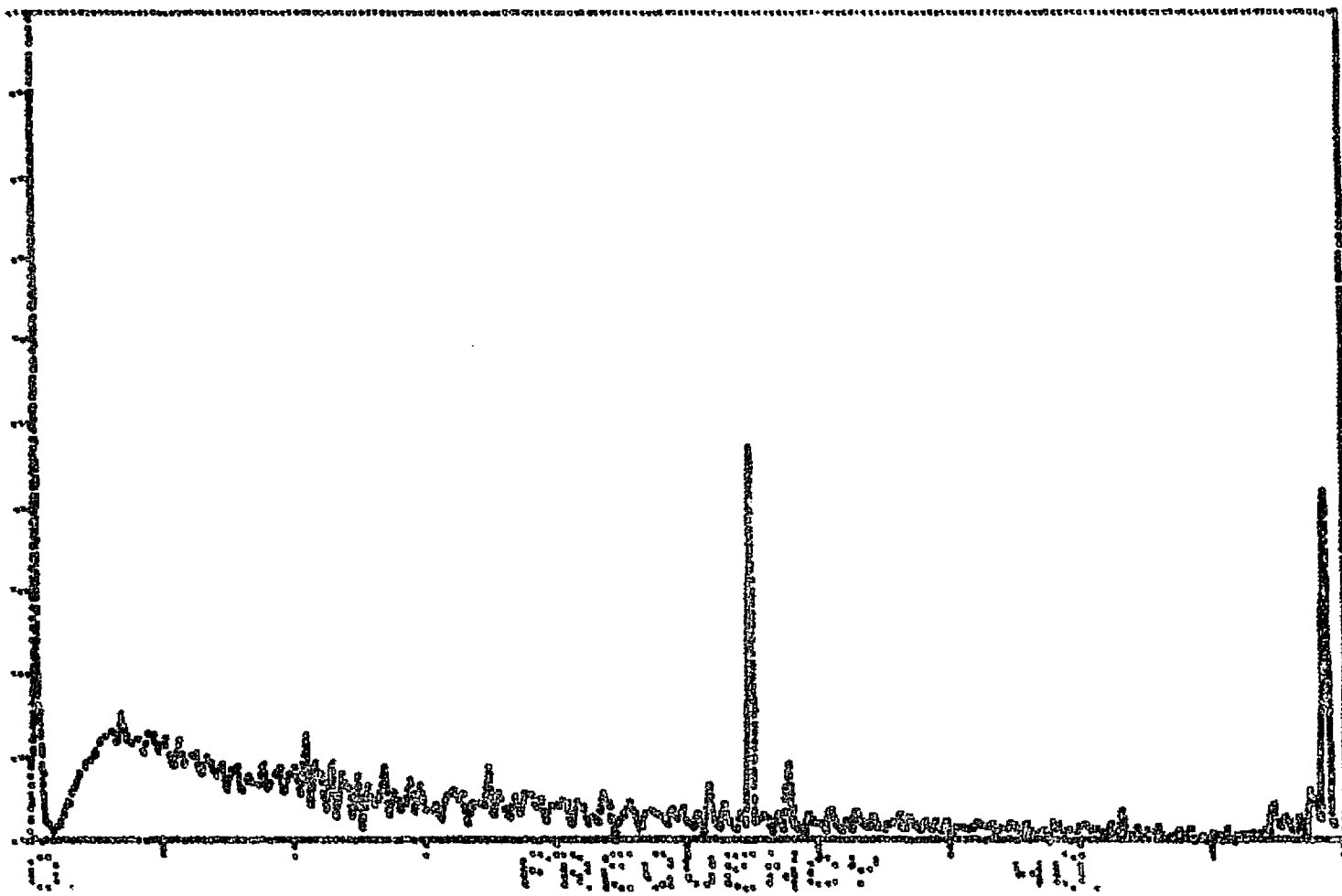
COMPLEX

31 32 33

1.

mag

0.



COMPLEX

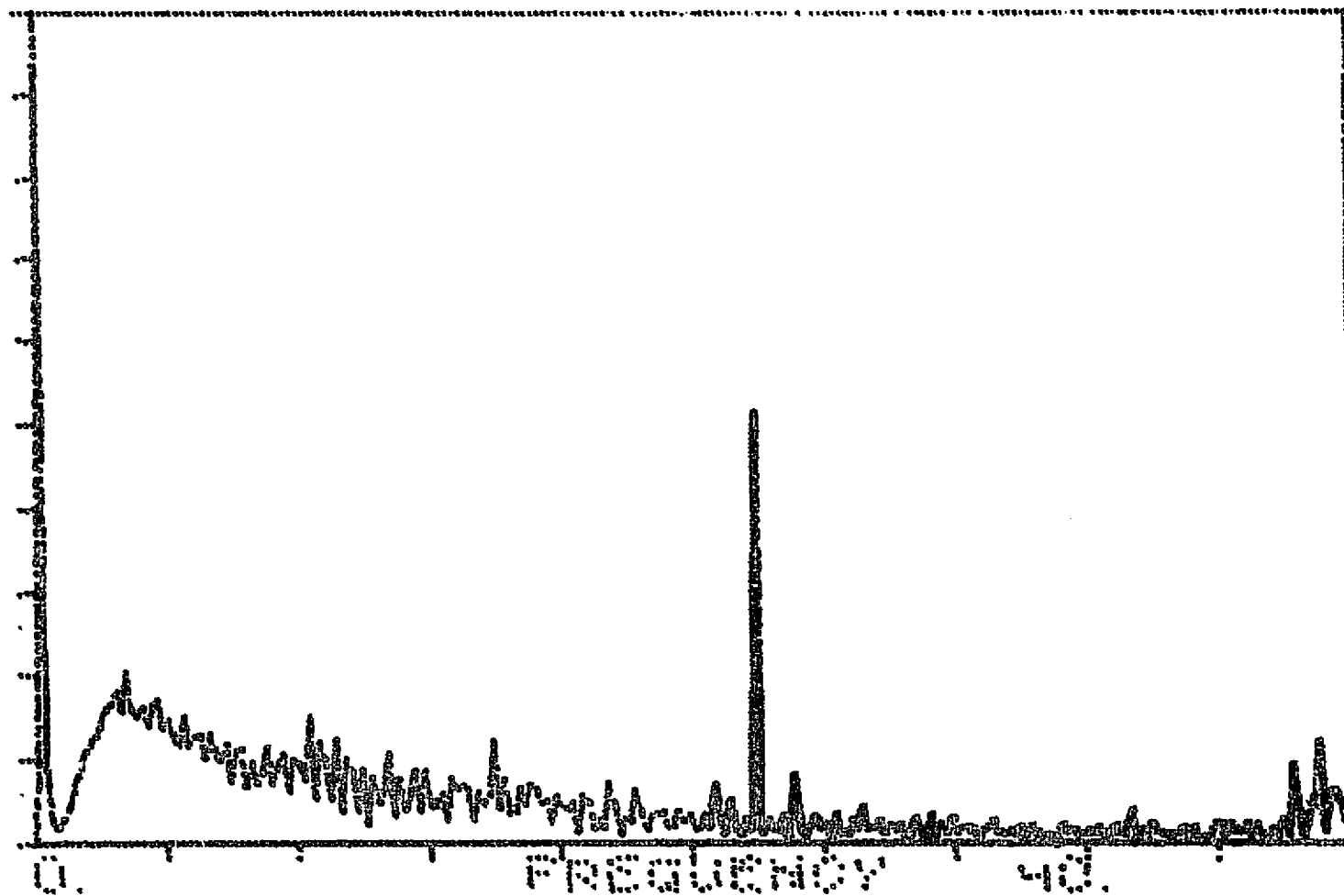
255 441

DL8/FL1

3.

1964

0.



COMPLEX

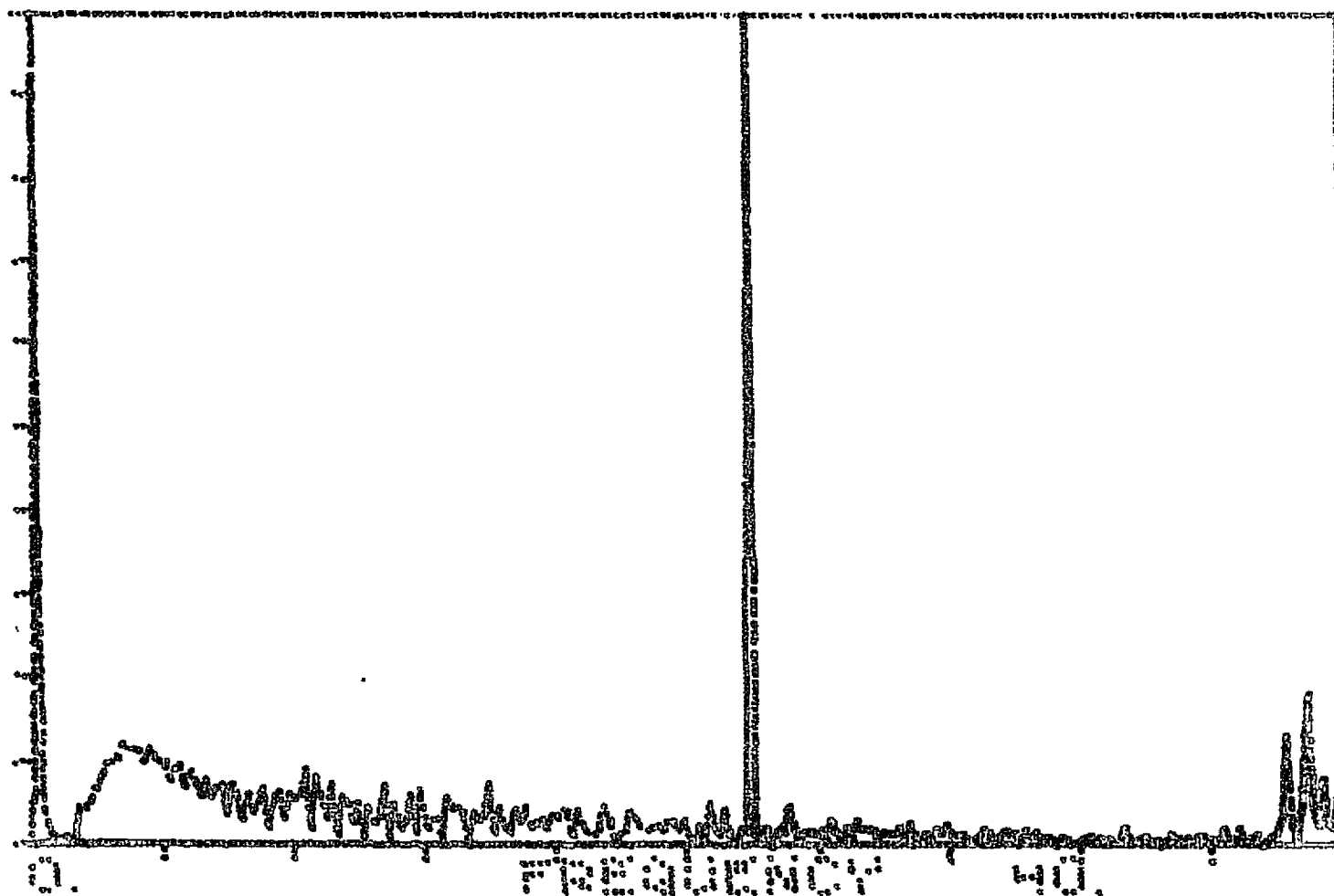
81280 358

DL9/FL1

1.

magh

0.



COMPLEX

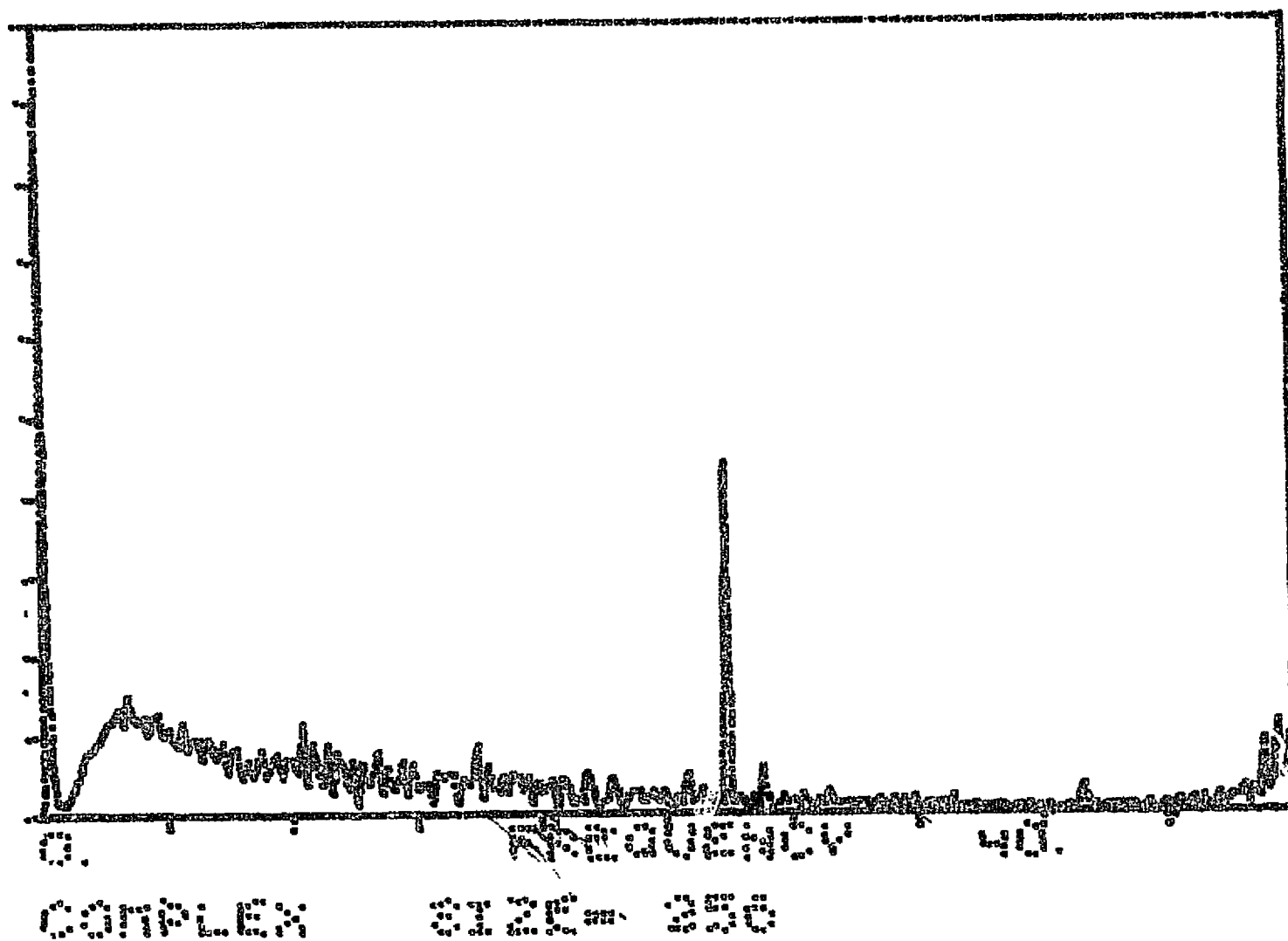
SIZE: 333

DL10/FL1

1.

mgm

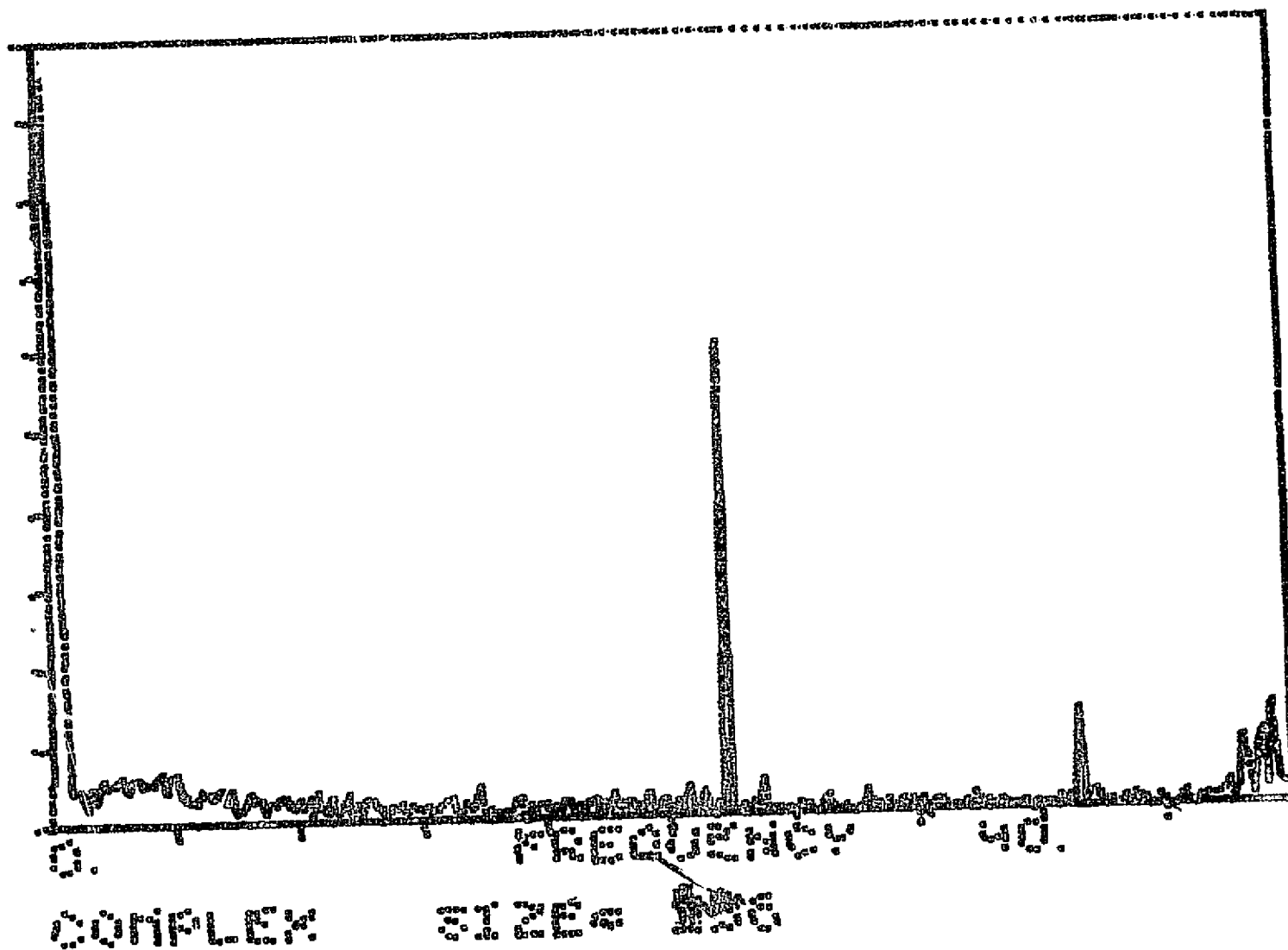
2.



1.

1964

0.

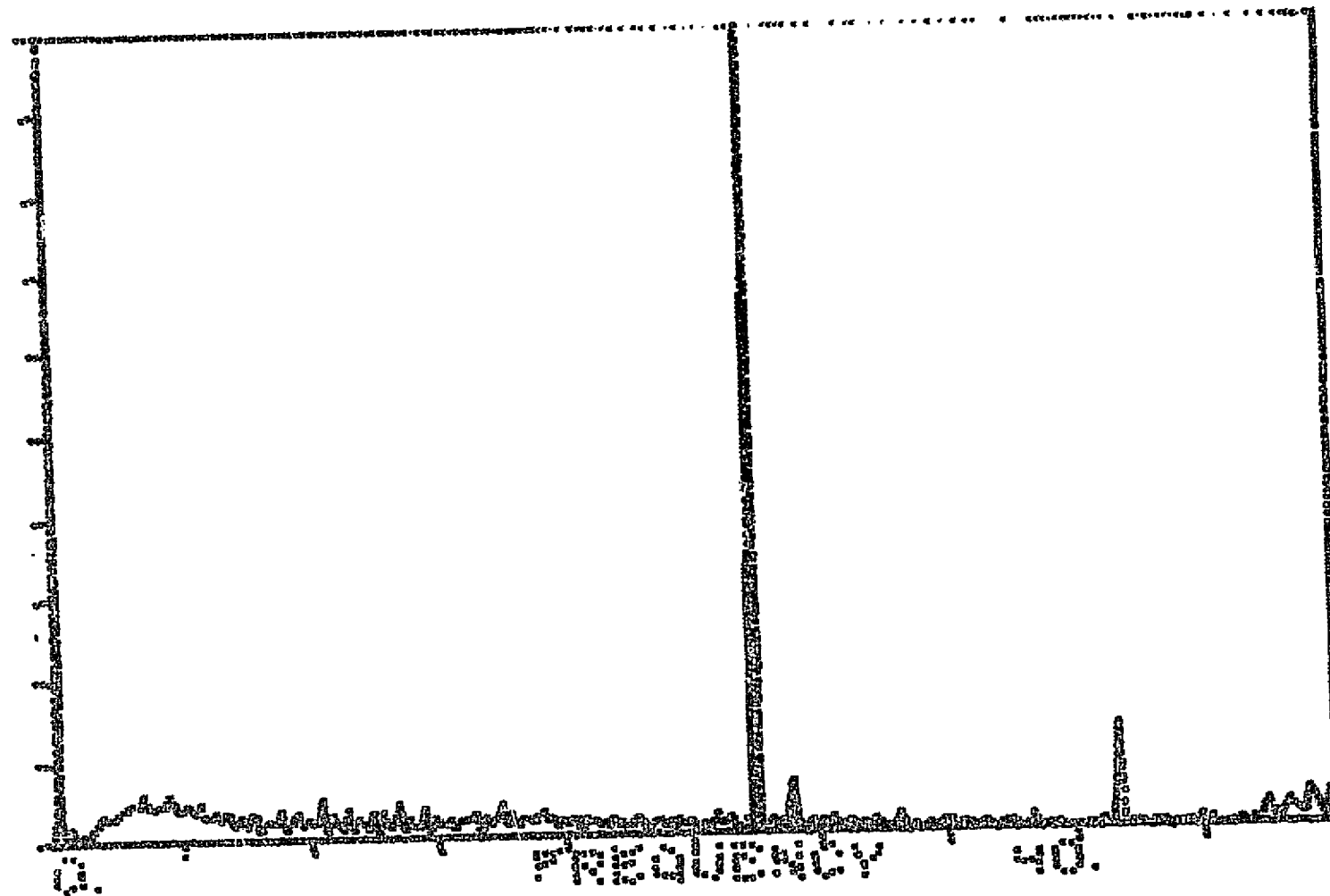


DL12/FL1

1.

max

0.



complex

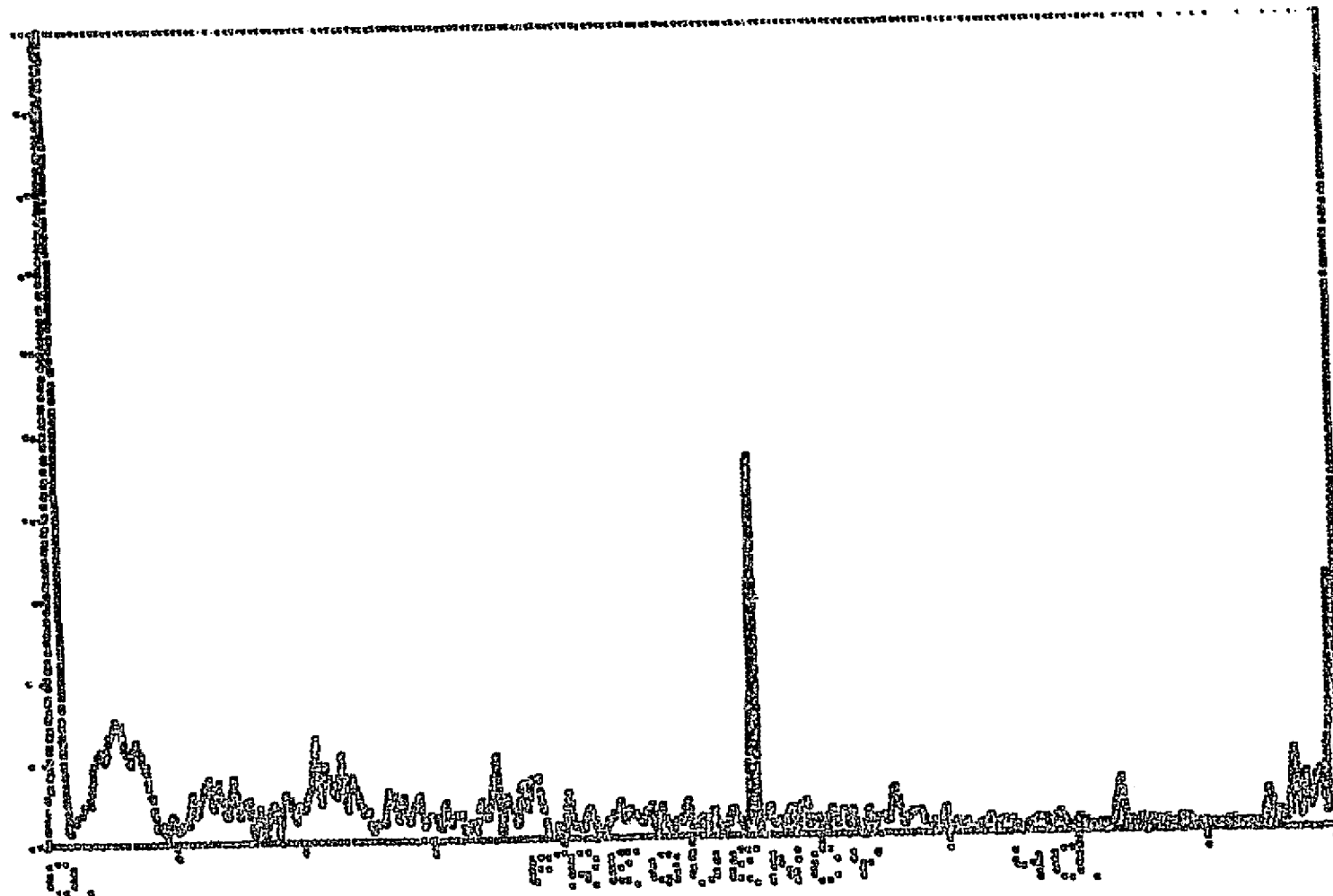
size 333

DL13/FL1

1.

11/11/11

2.



CONFLA

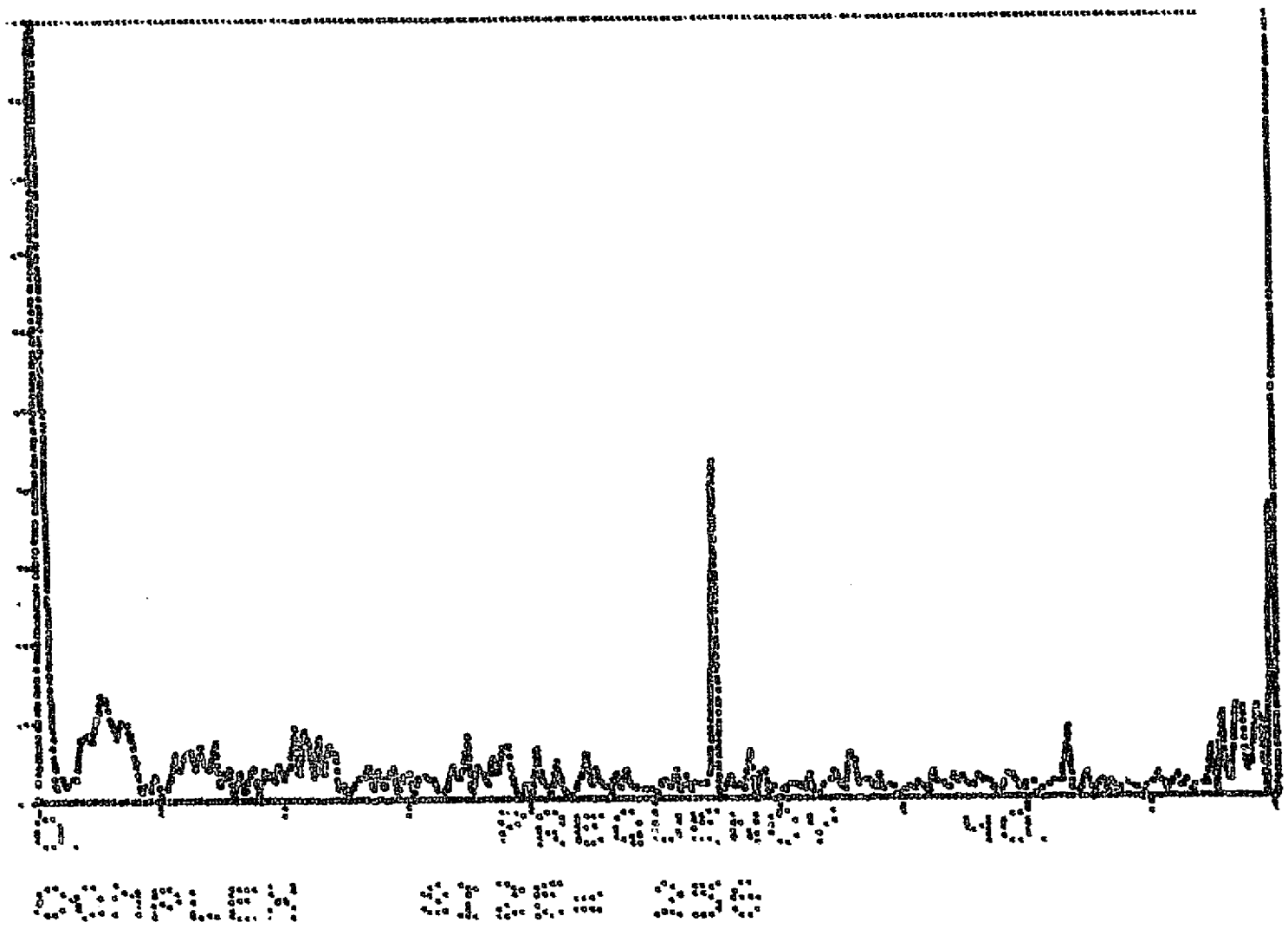
01:21:20

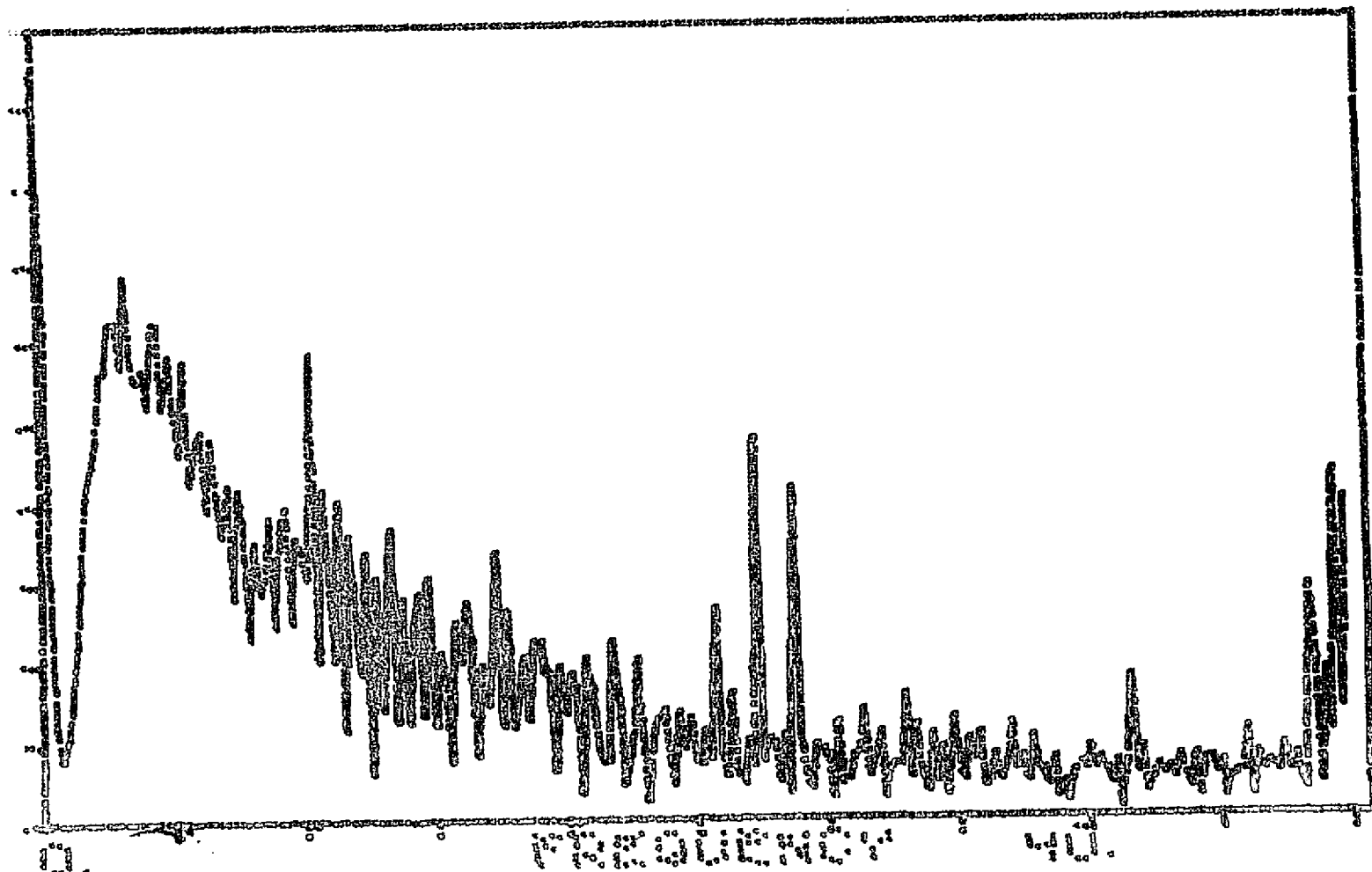
DL14/FL1

4.

1000

0.

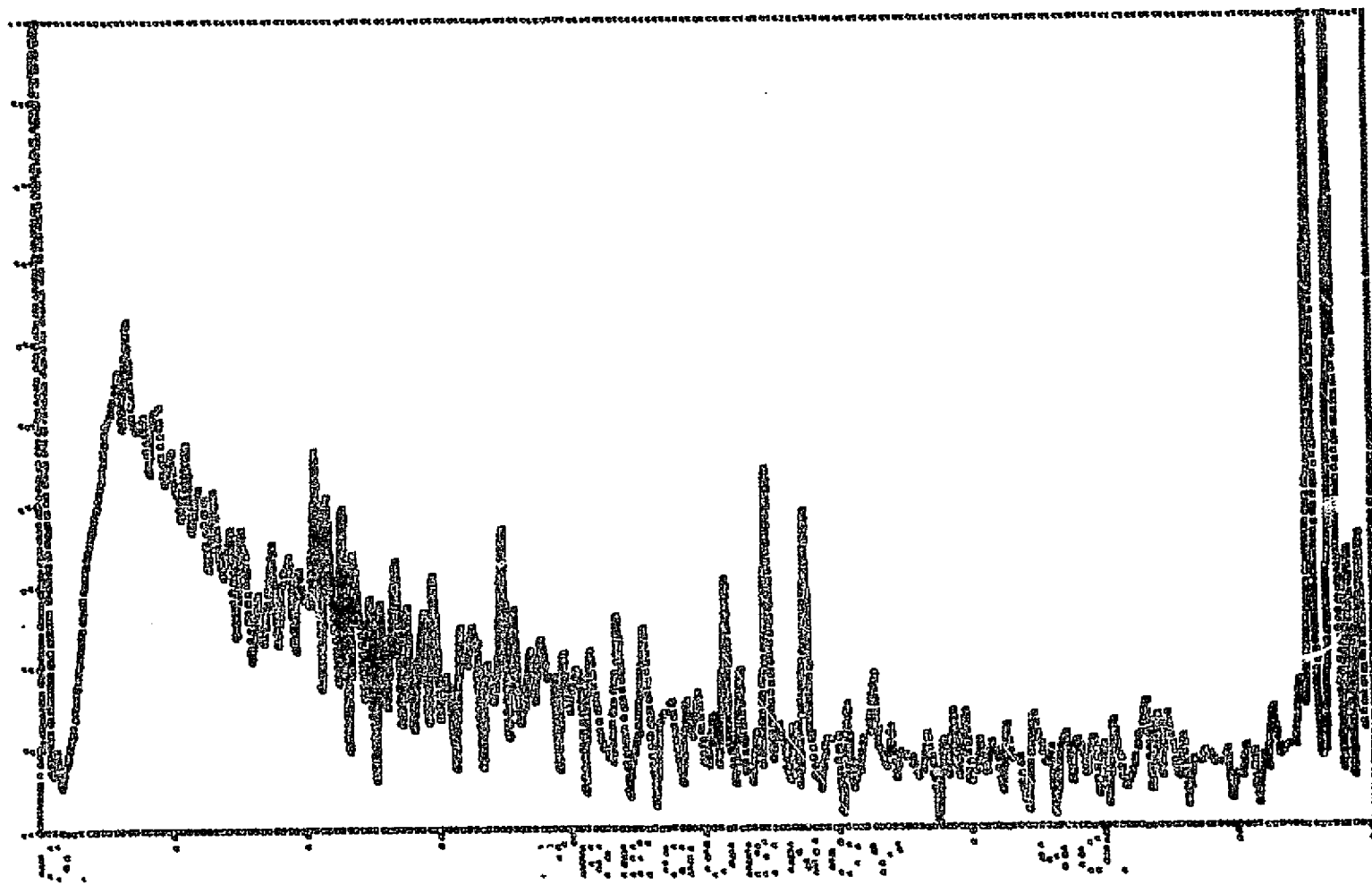




153

COMPLETED 0234 209

DL16/FL1



COMPLEX

SIZE: 256

VOLUME II

RUN 14 TEST DATA

Y-AXIS, 4510 POUND/ACTUATOR TEST LEVEL,
ACTUATORS 180° OUT OF PHASE

1 HEADING: TRAIN TRACK TRANSFER 4510 LB TEST 3/19/75

SWEEP PARAMETERS:

2 MODE 1=LOG, 0=LIN: 1.
 3 TYPE 1=UNI-DIRECTIONAL, 0=BI-DIRECTIONAL: 1.
 4 START, END FREQ, HZ: .5 50.
 FREQ RANGE -- OCTAVES, DECADES: 6.644 2.
 5 SPECIFICATION 1=RATE, 0=DURATION: 1.
 6 UNITS 1=OCT/MIN, 0=DEC/MIN: 1.
 7 RATE, OCT/MIN: 2.
 SWEEP DURATION -- MIN, SEC: 3. 19.

TEST LENGTH:

8 SPECIFICATION 1=TIME, 0=SWEEP CYCLES: 0.
 9 CYCLES: 1.
 TEST TIME -- HRS, MIN, SEC: 0. 3. 19.

START-UP AND SHUT-DOWN:

10 START-UP TIME, SEC: 120.
 11 SHUT-DOWN TIME, SEC: .5

VIBRATION LIMITS (P-P):

12 DISPLACEMENT, IN: 5000.
 13 VELOCITY, IN/SEC: 9999.
 14 ACCELERATION, G: 450.

REFERENCE CONTROL SPECTRUM:

15 TYPE, VALUE, FREQ, ABORT LIMIT:	2.	40.	0.5	7.
16 TYPE, VALUE, FREQ, ABORT LIMIT:		60.	1.3	4.
17 TYPE, VALUE, FREQ, ABORT LIMIT:	2.	60.	50.	4.
18 TEST LEVEL (DB BELOW REF):	6.			

ACCELERATION SIGNALS:

19 NR OF SIGNALS: 2.
 CHANNEL NRS: 1. 2.
 20 1=PEAK, 0=RMS: 0.
 21 SENSITIVITY, MV/G: 20.
 22 STRATEGY 1=MAX, 0=AVG: 1.

LIMIT SIGNALS:

23 NR OF SIGNALS: 0.

ABORT LINES:

24 NR OF LINES: 0.

ALARM LINES:

25 NR OF LINES: 0.
 26 1=DUAL-CHANNEL A/D, 0=ACE: 1.
 27 COMPRESSION SPEED 2=HIGH, 1=NORMAL, 0=LOW: 1.

POST-TEST DOCUMENTATION

TRAIN TRACK TRANSFER 4510 LB TEST 3/19/75

COMPLETION STATUS: ABORTED DURING SWEEP 1 AT 26.68 HZ.
CONTROL LIMITS EXCEEDED.

TEST DURATION -- HRS, MIN, SEC: 0 2 52

MAX ABS CONTROL ERROR: 4.31 DB AT 26.63 HZ.
AVG ABS CONTROL ERROR: .1342 DB.CONTROL
CHANNEL FREQ RANGE (HZ)

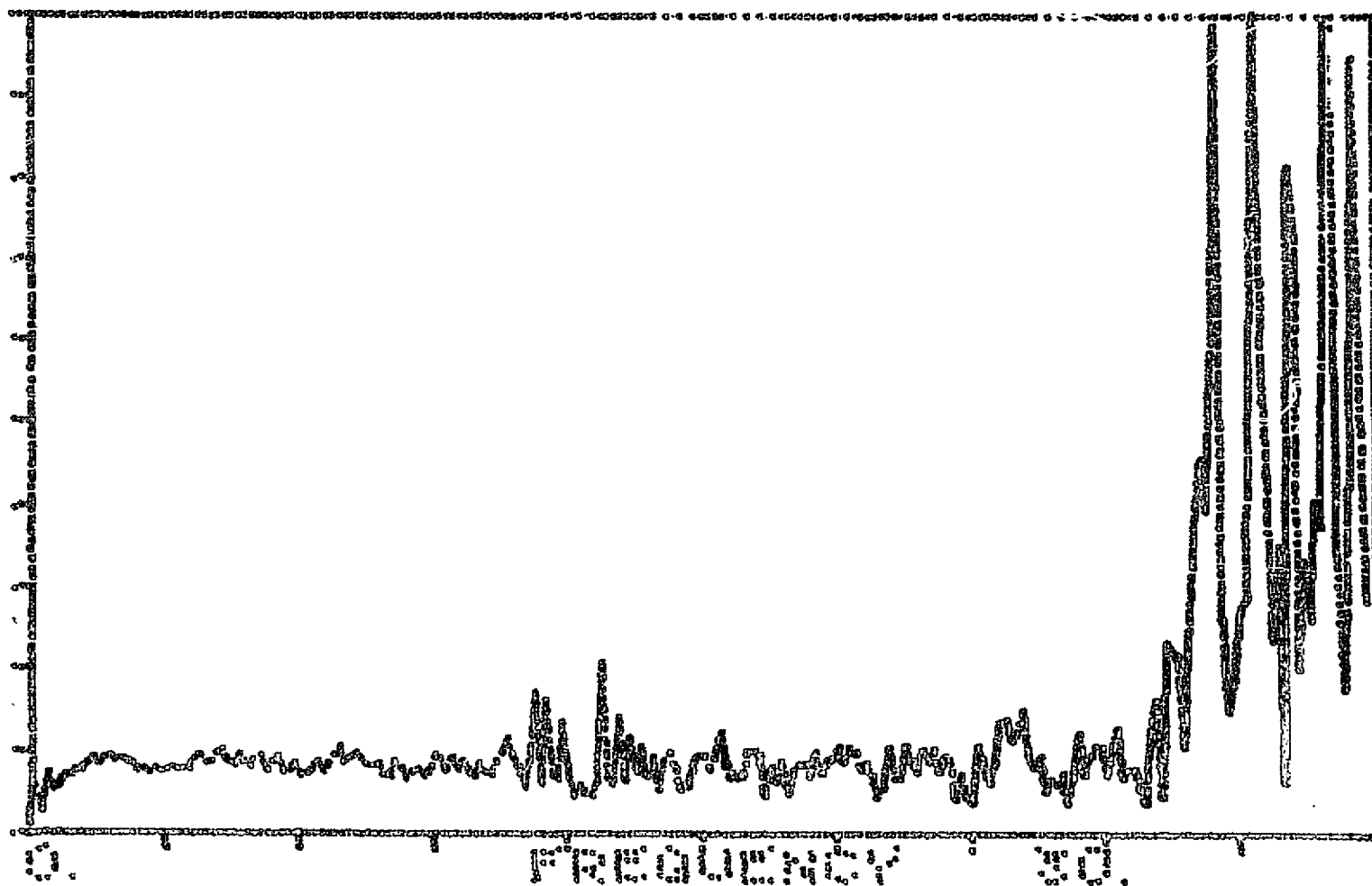
SWEEP 1

2	.5	--	.904
1	.904	--	1.758
2	1.758	--	4.021
1	4.021	--	6.083
2	6.083	--	26.63
1	26.63	--	26.68

0.00

0.00

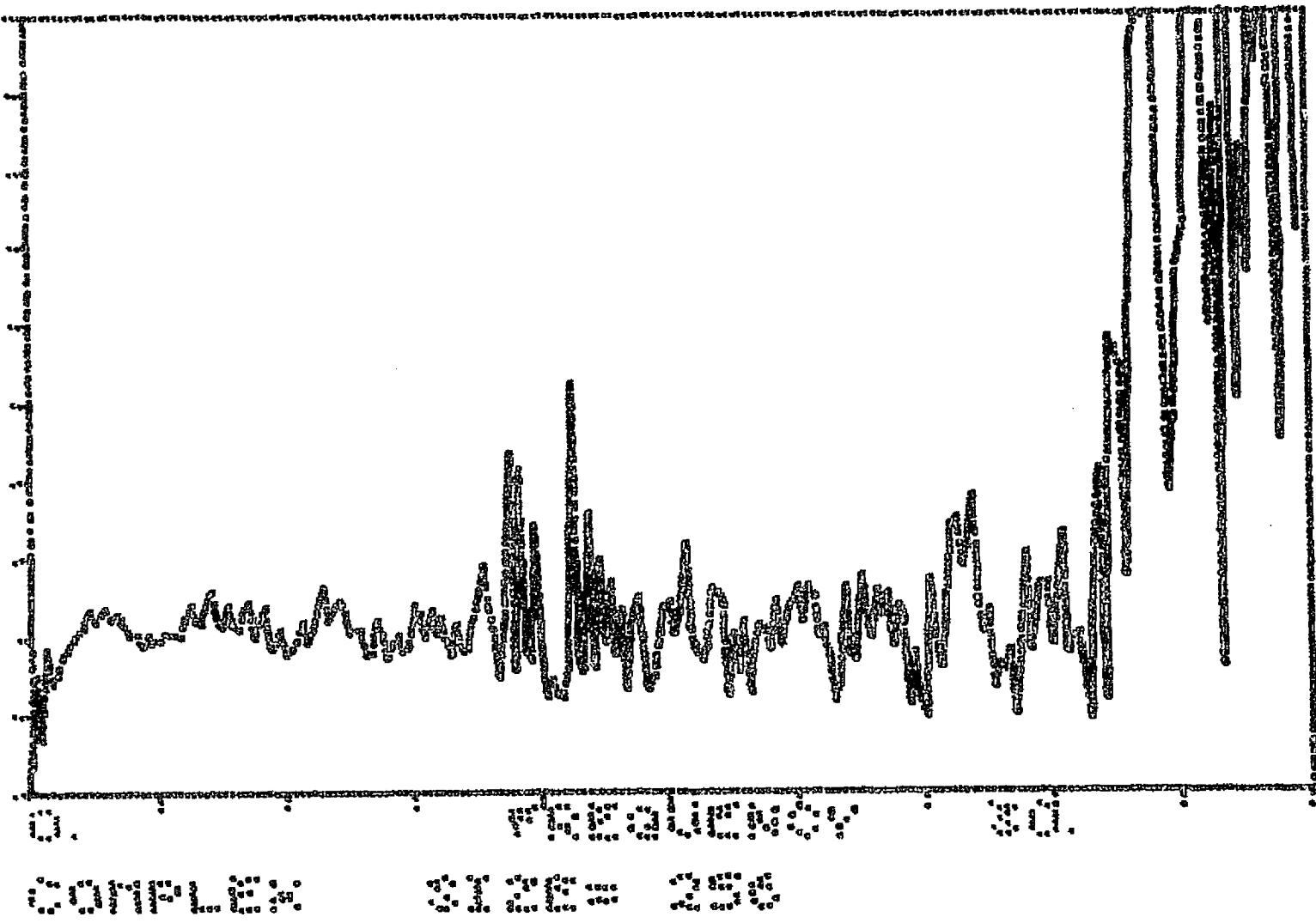
0.00



COMPLEX

SIZE: 256

FL1/DRIVE



1

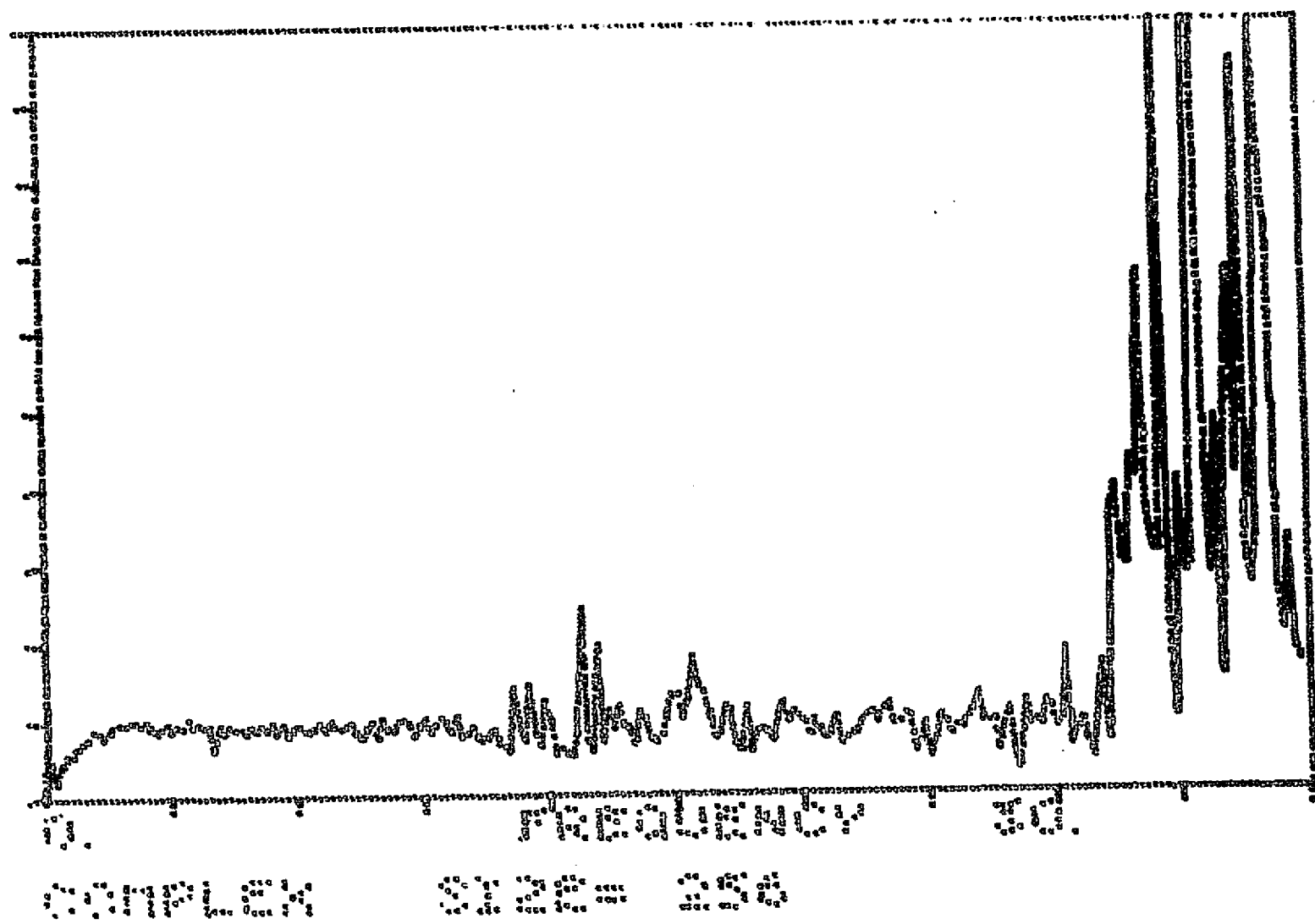
1000

1

1000

1000

1000

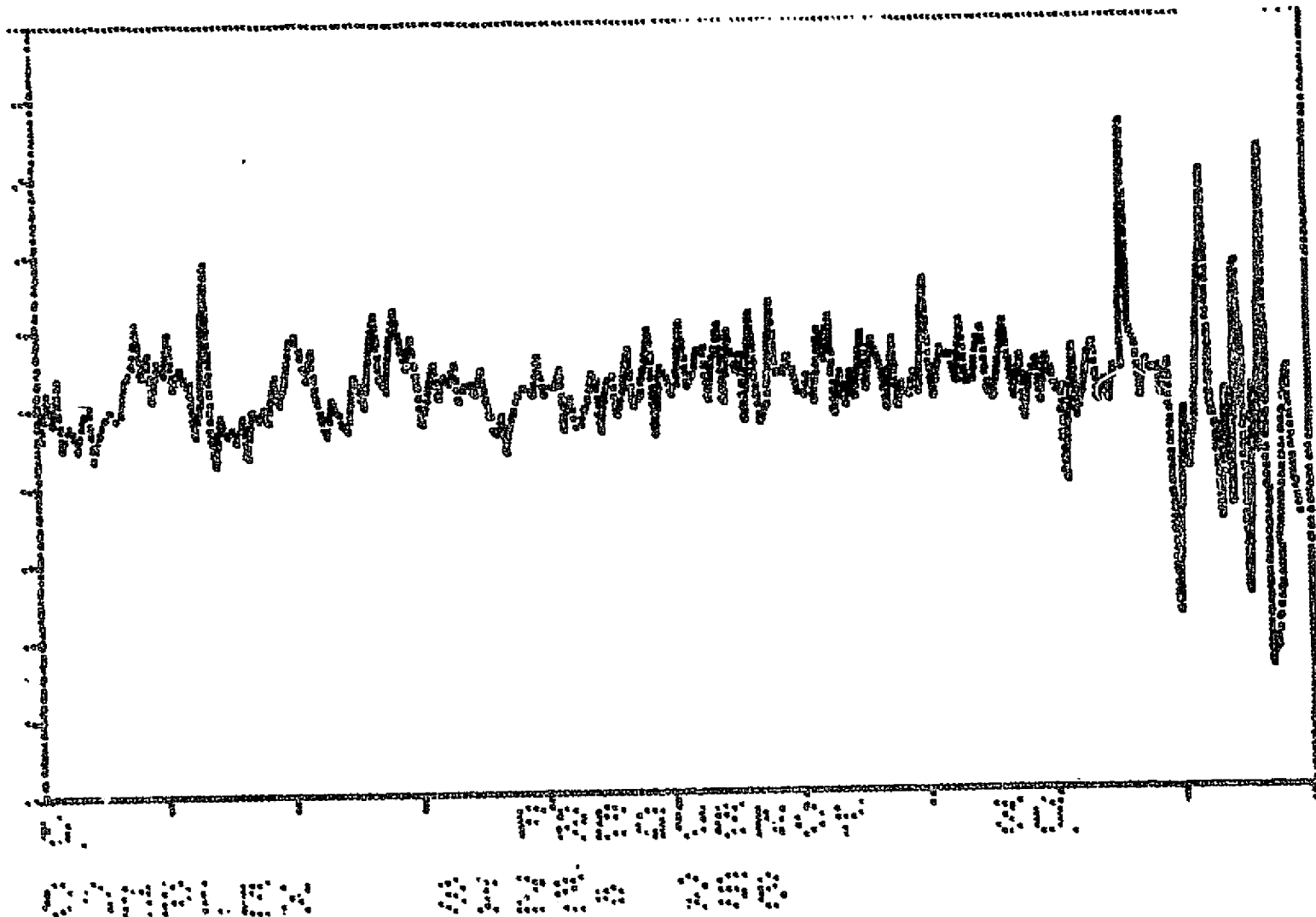


FL2/DRIVE

2.

1000

0.

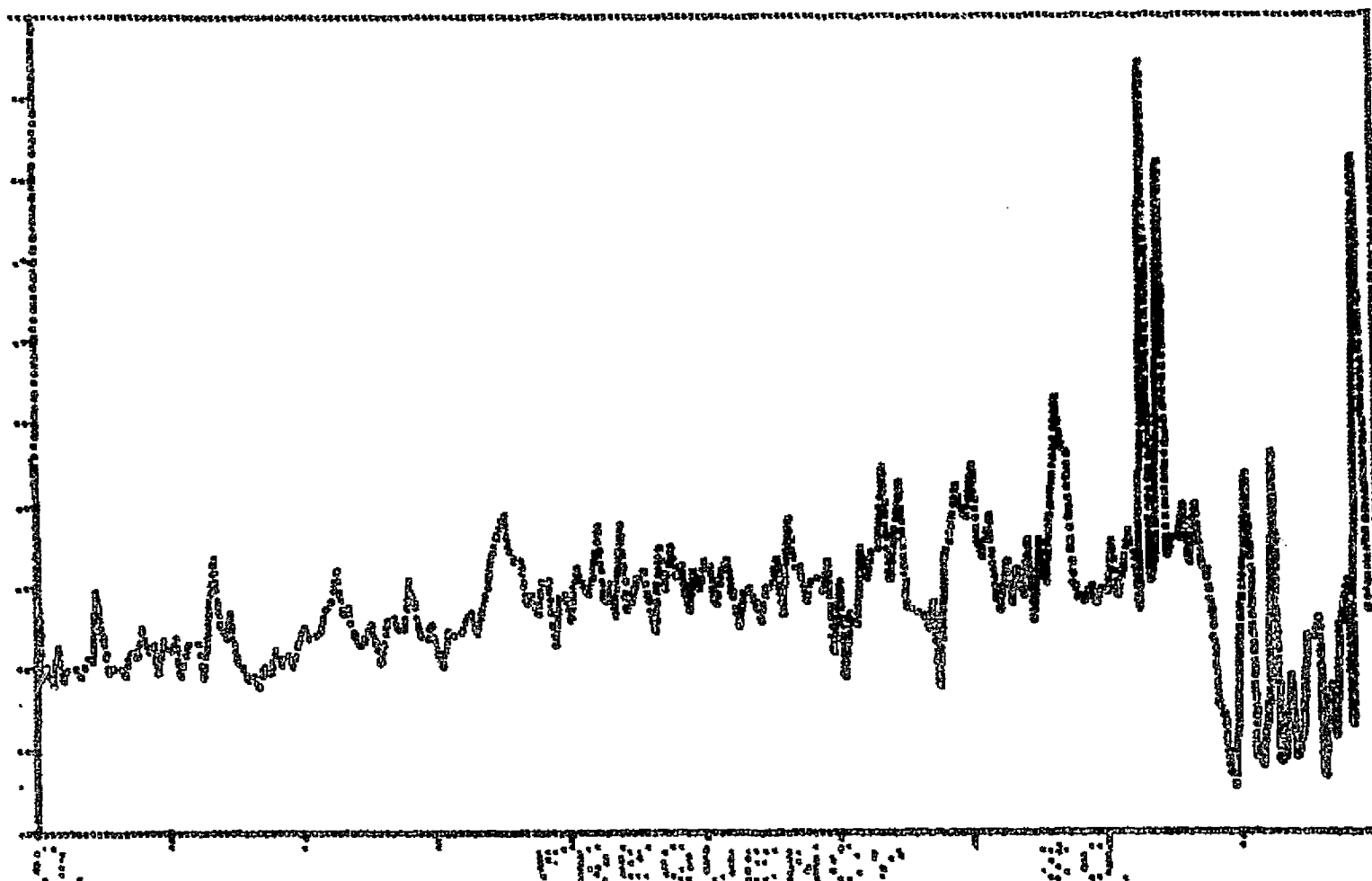


FL2/FL1

2.

mag

0.



COMPLEX

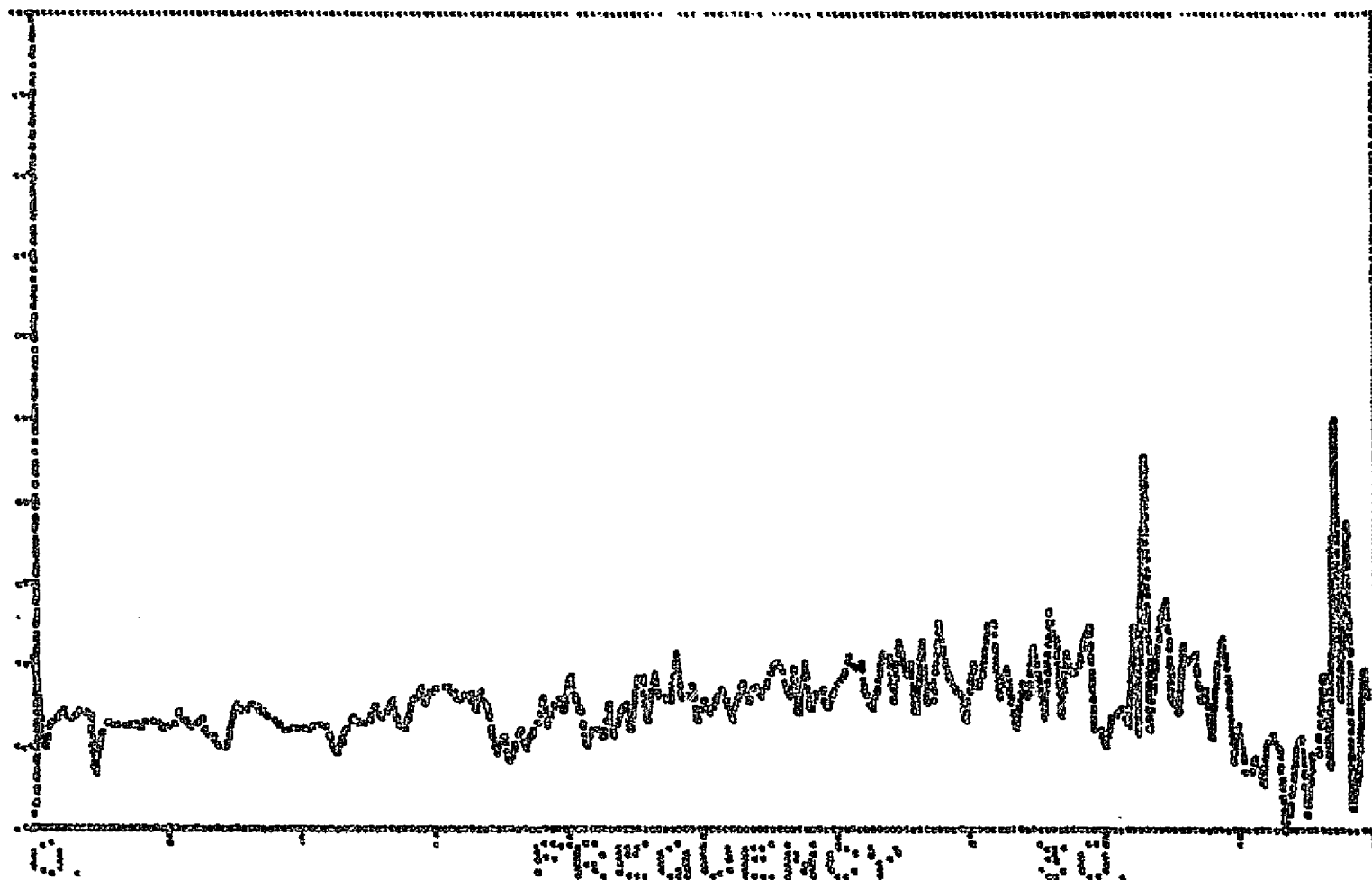
SIZE= 256

FV2/FL1

g.

1404

a.



COMPLEX

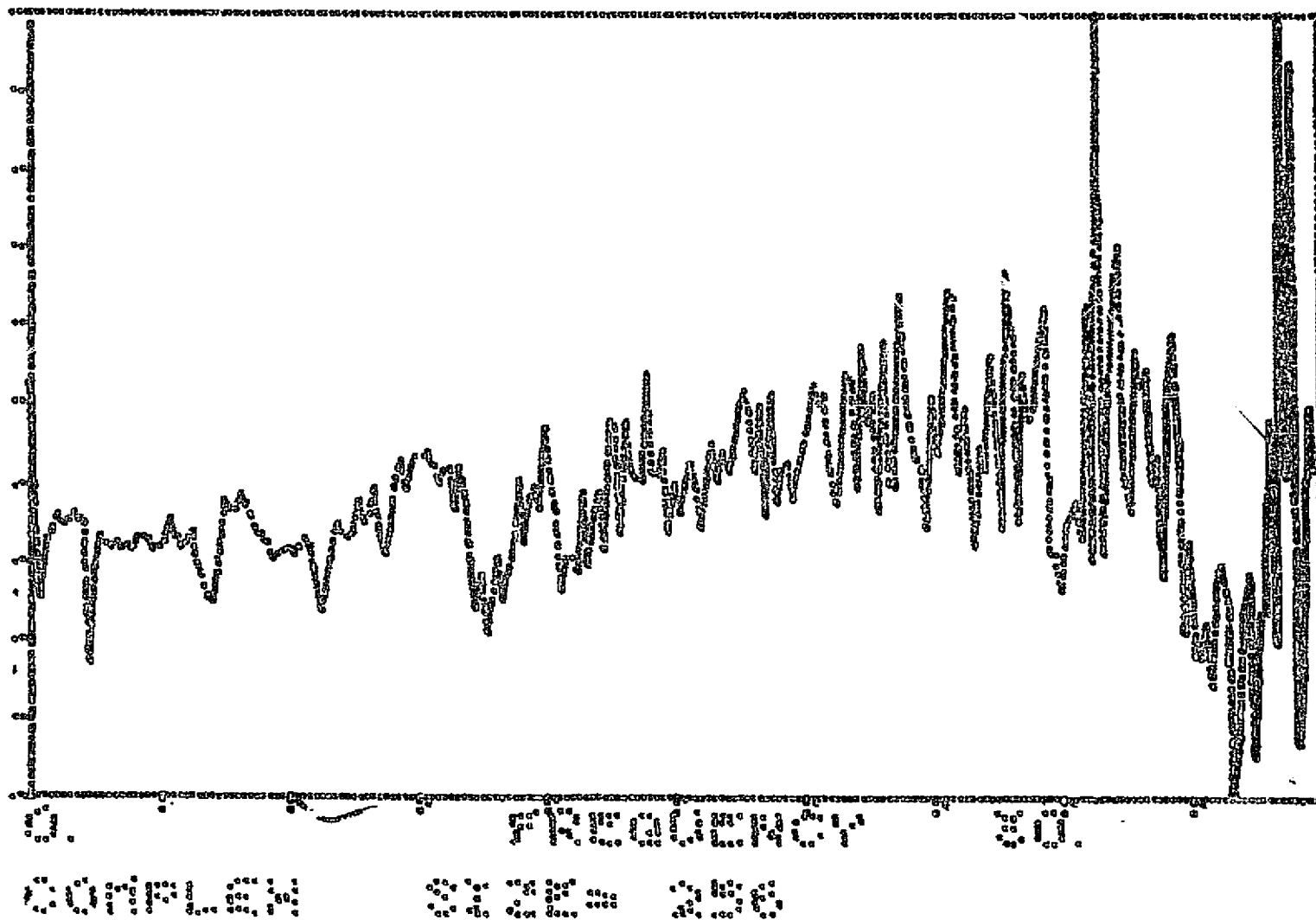
01234 255

FV3/FL1

2

7503

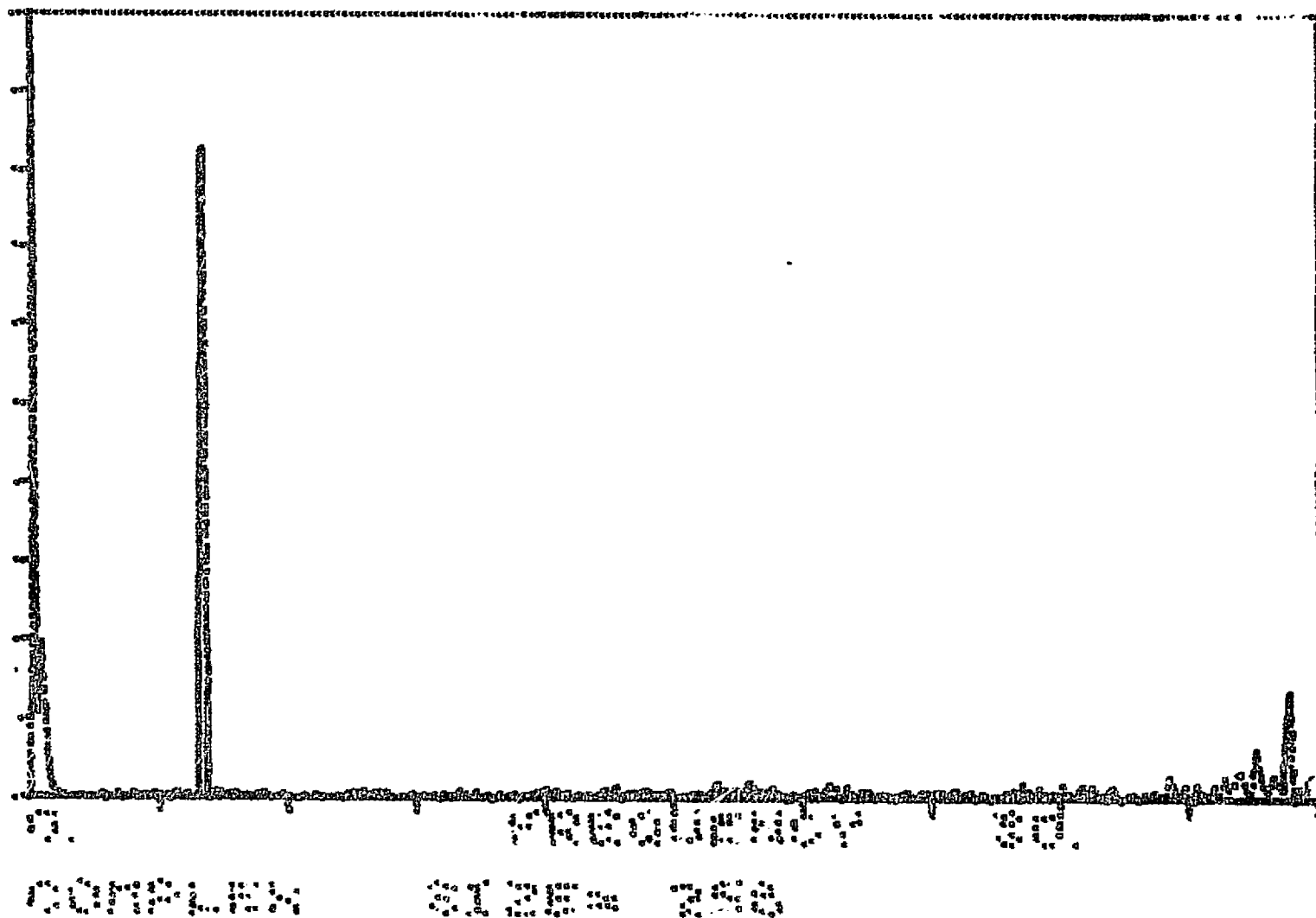
2



1.

1994

0.

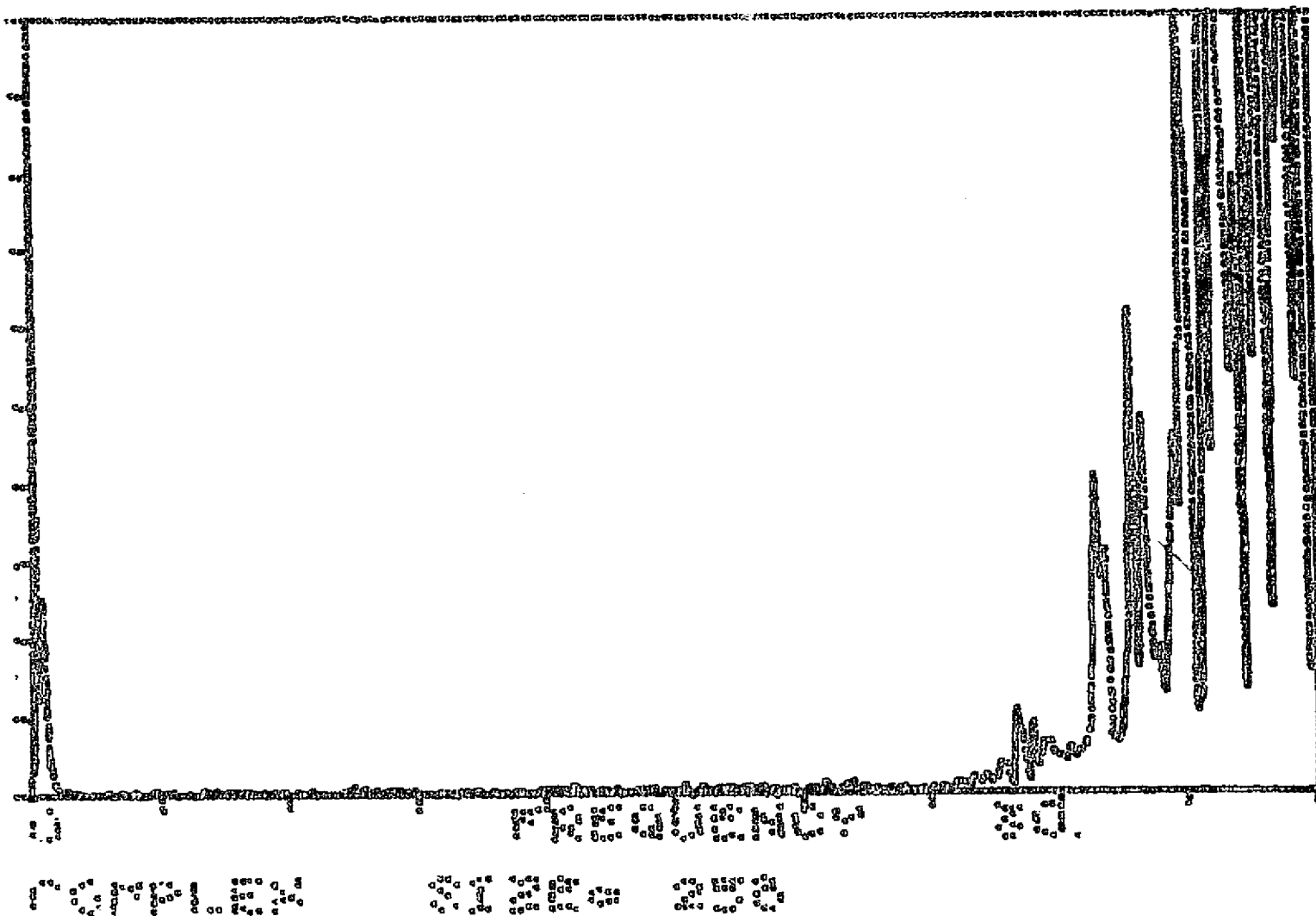


DVI/FL1

1

1993

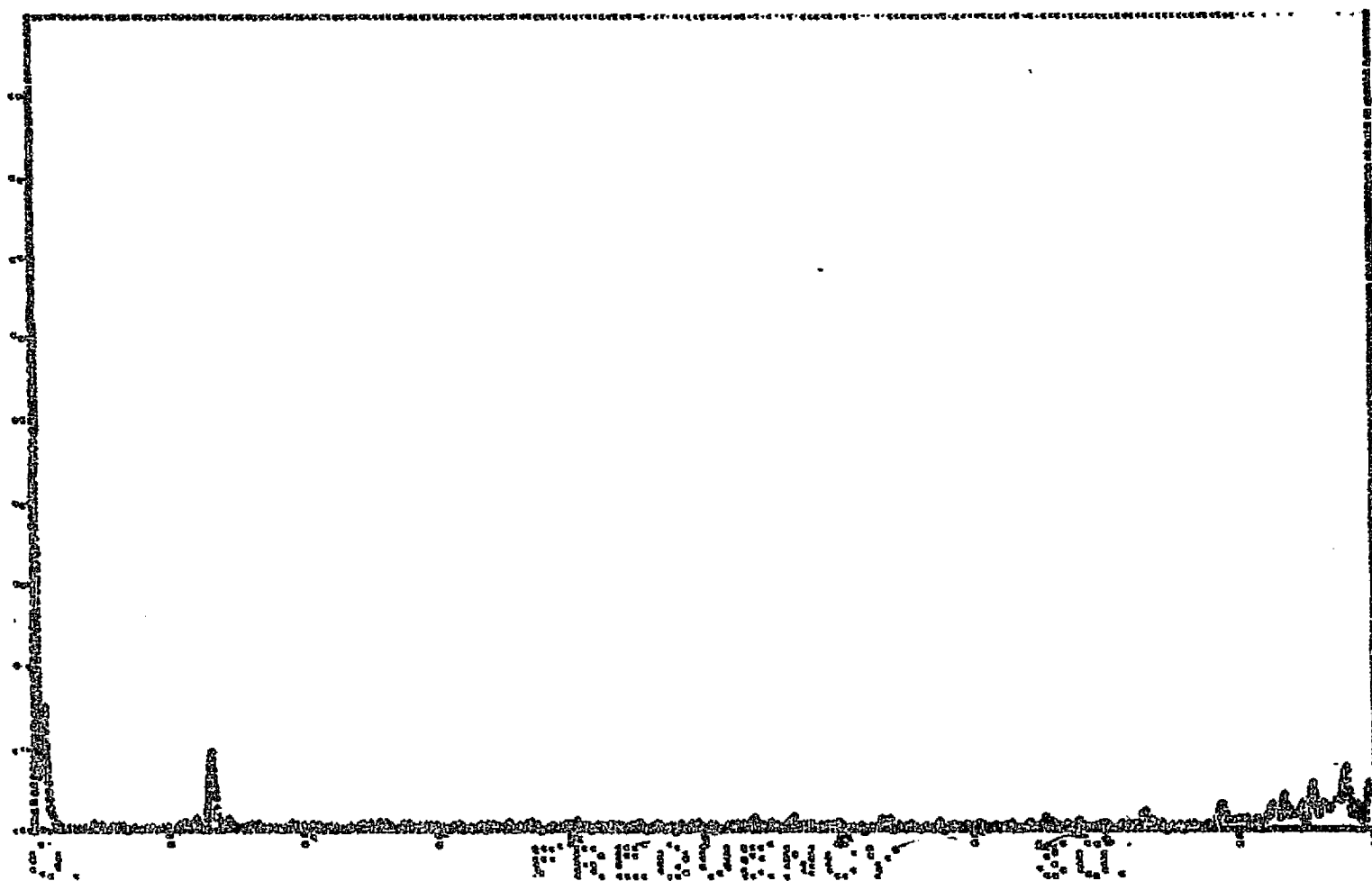
1



1.

1984

0.



Complex

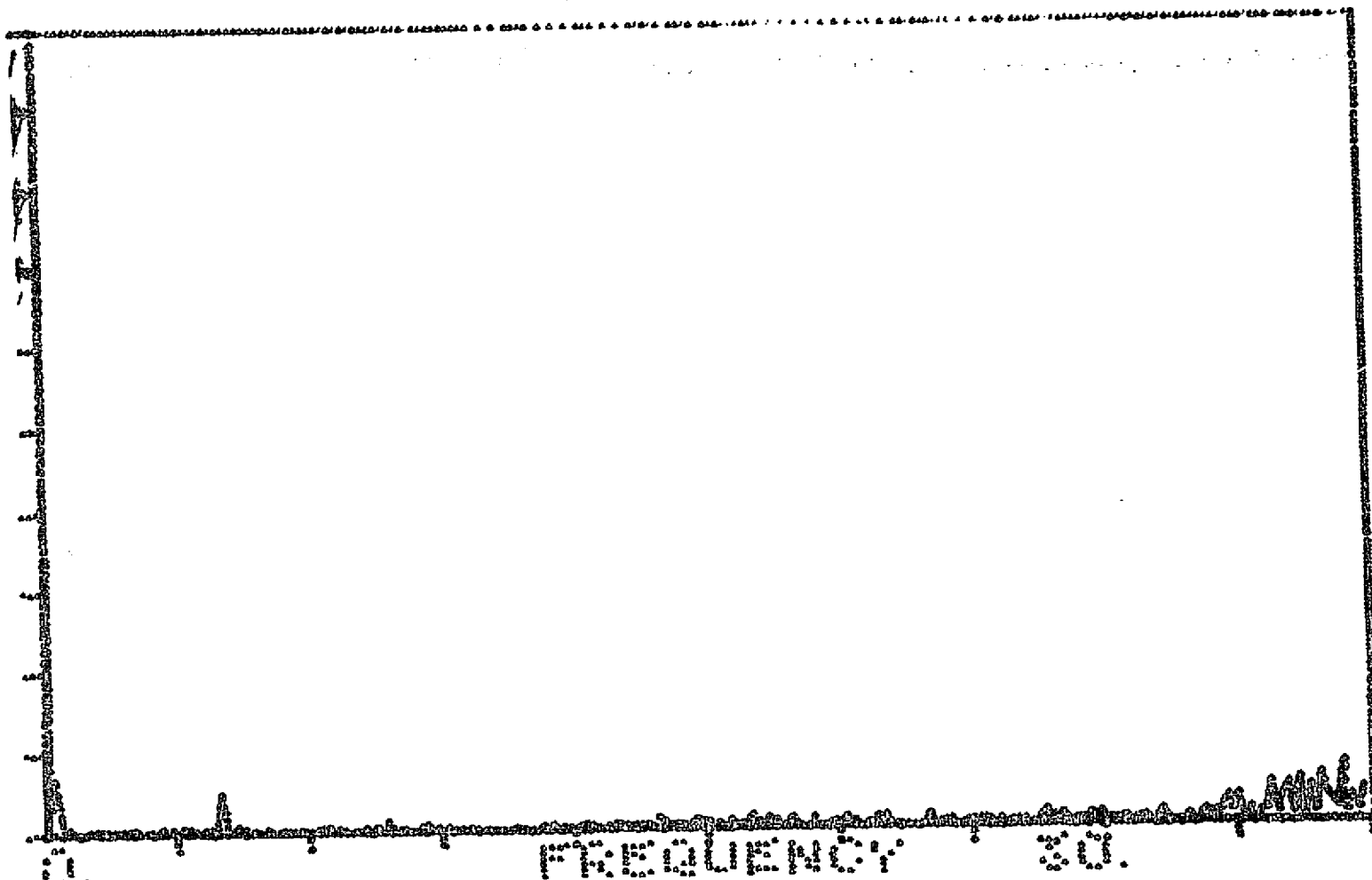
22.25 GHz

DV1/FL1

4.

1954

10.



COMPLEX

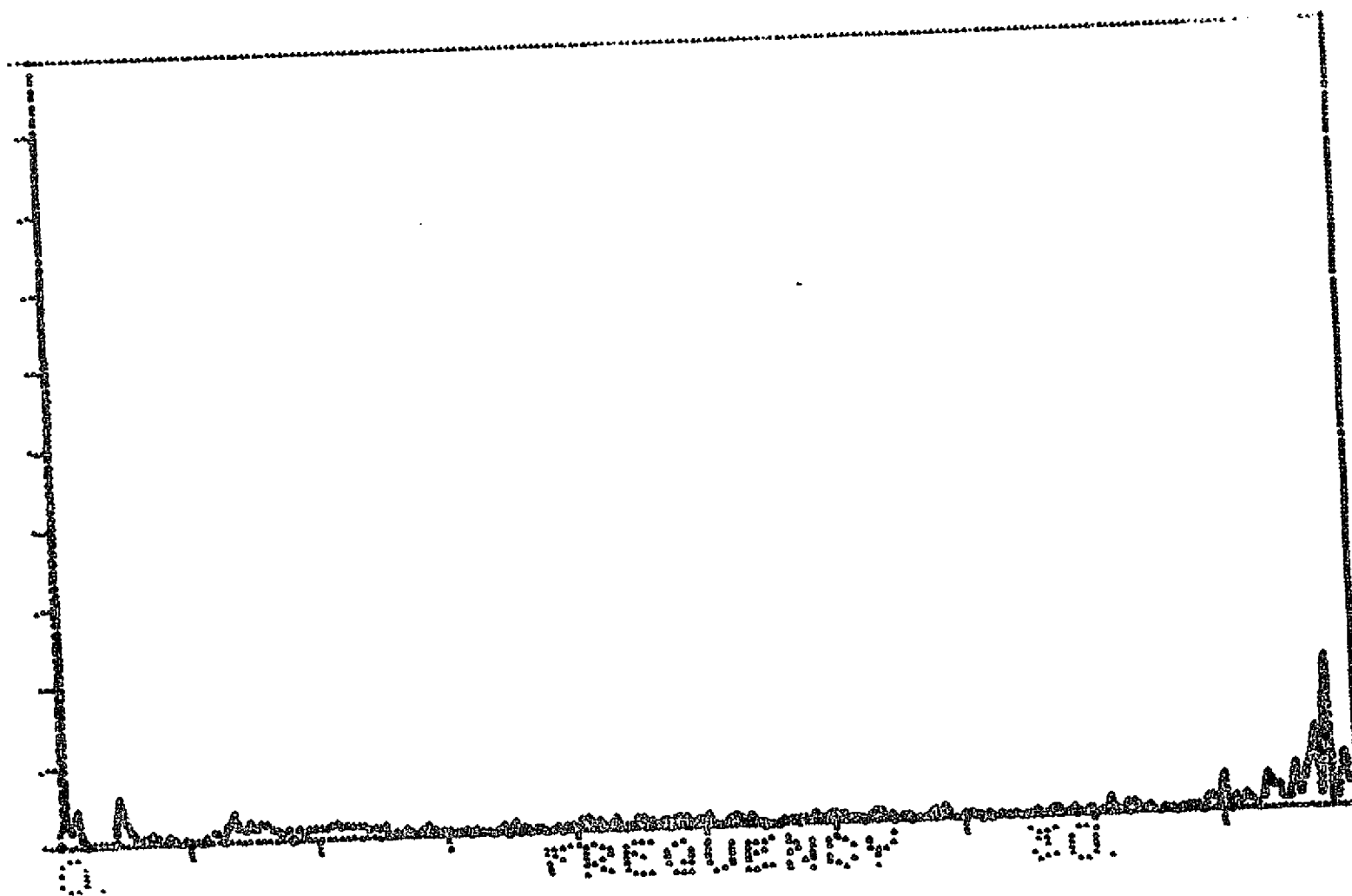
SIZE 255

DV2/FL1

1.

mach

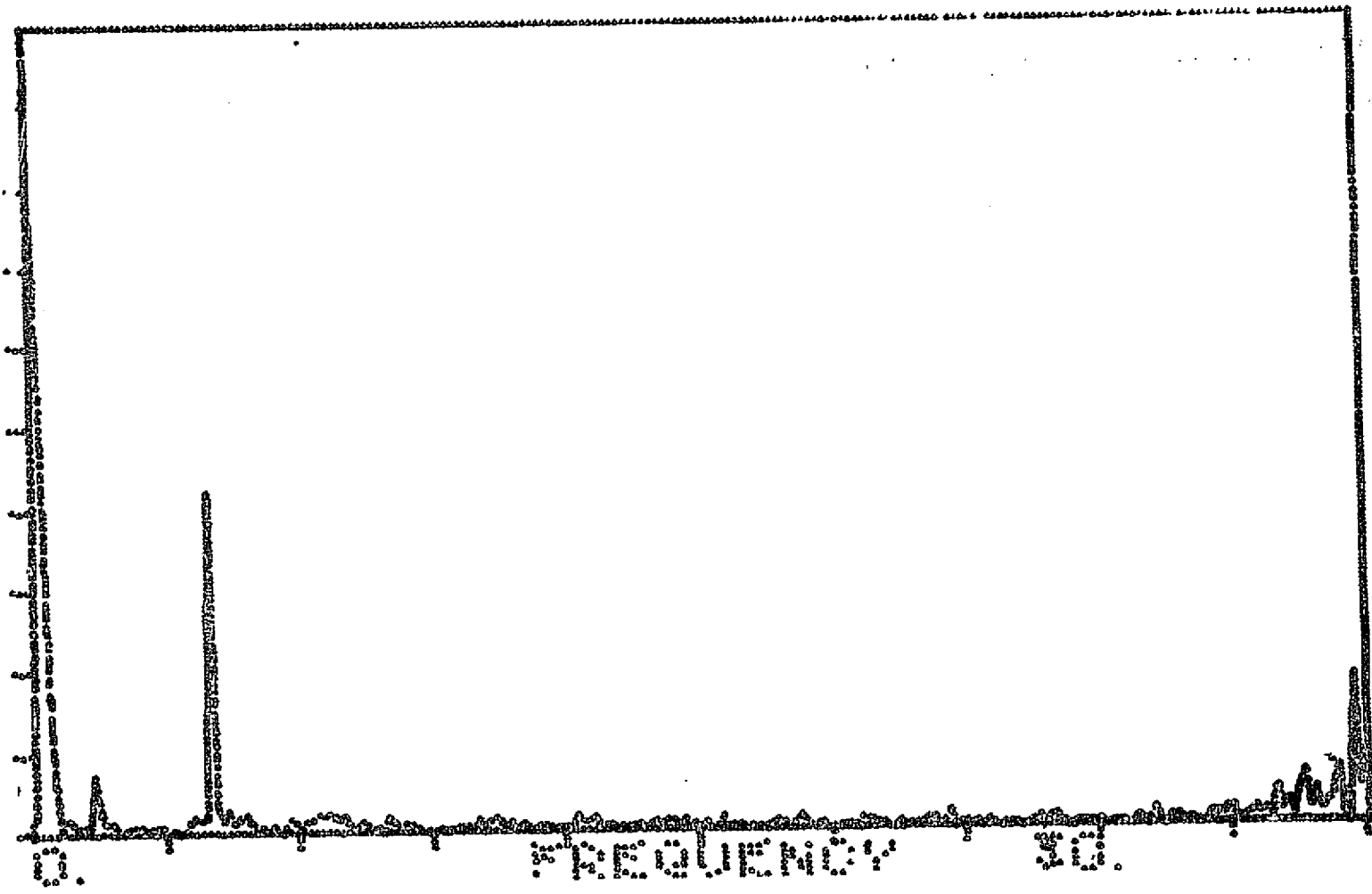
0.



169

COMPLEX SIZE 255

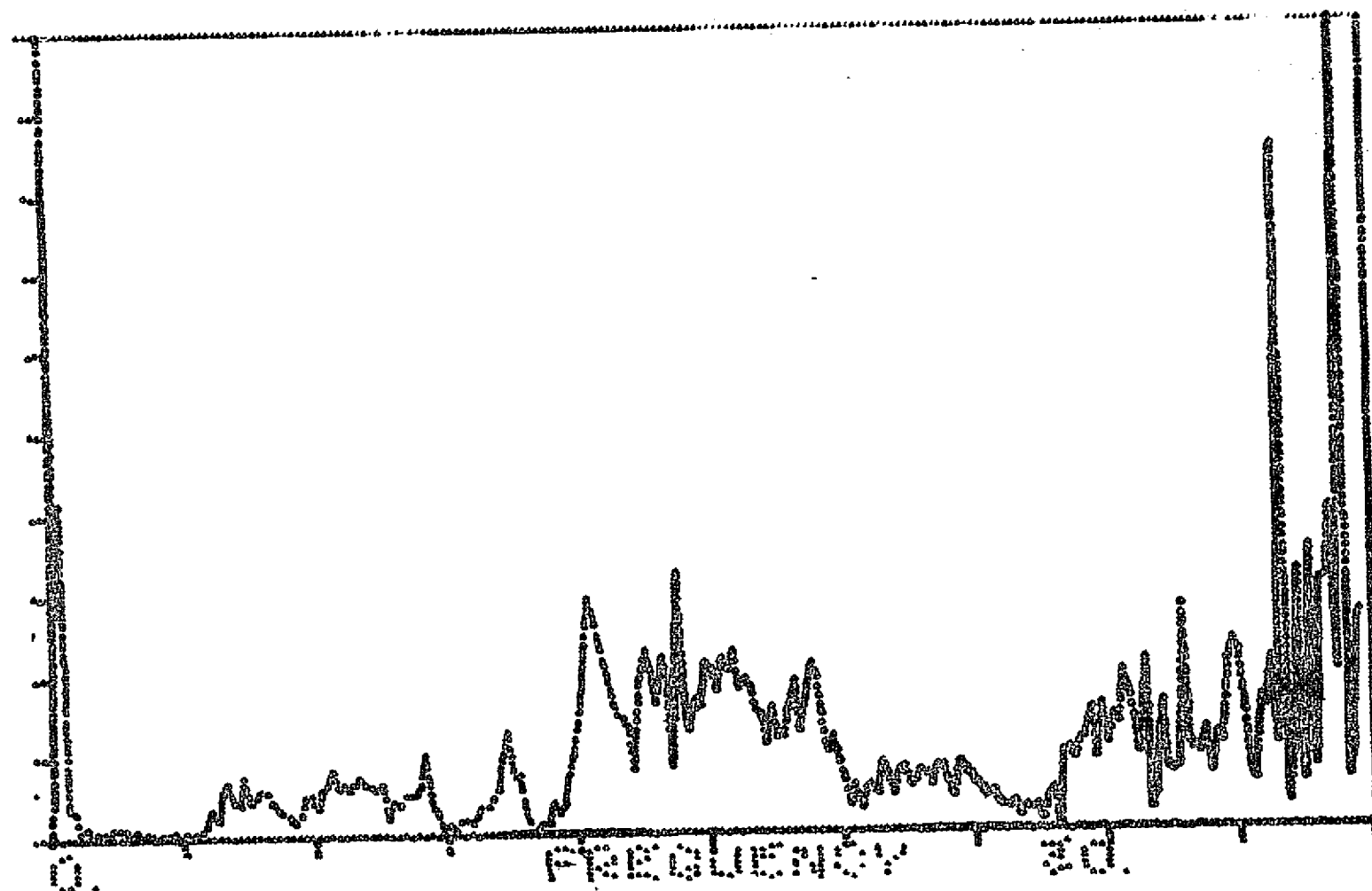
DV3/FL1



COMPLEX

SIZE: 256

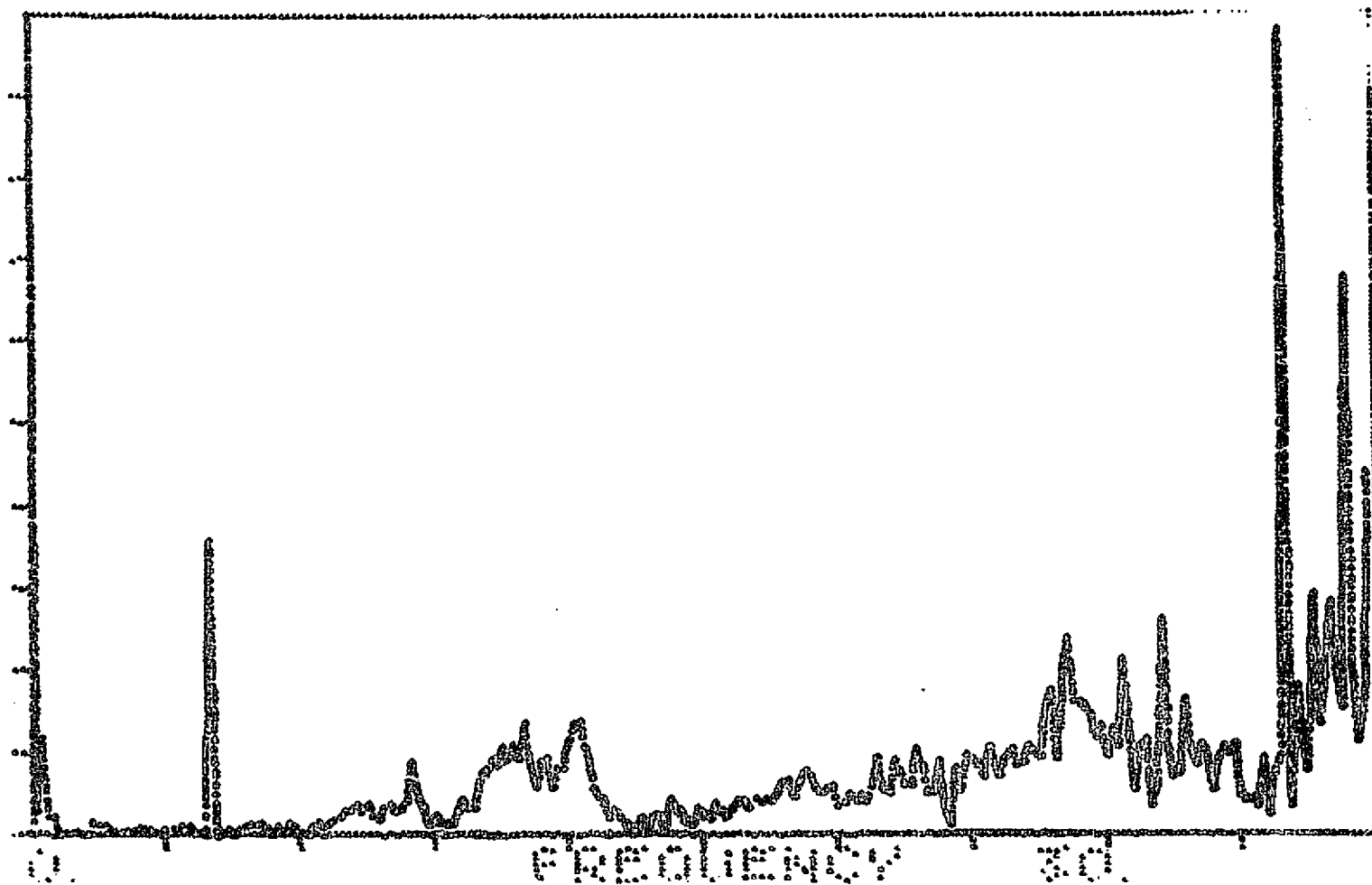
DV4/FL1



COMPLEX SIZE 256

AV1/FL1

1. HAOA



00000000

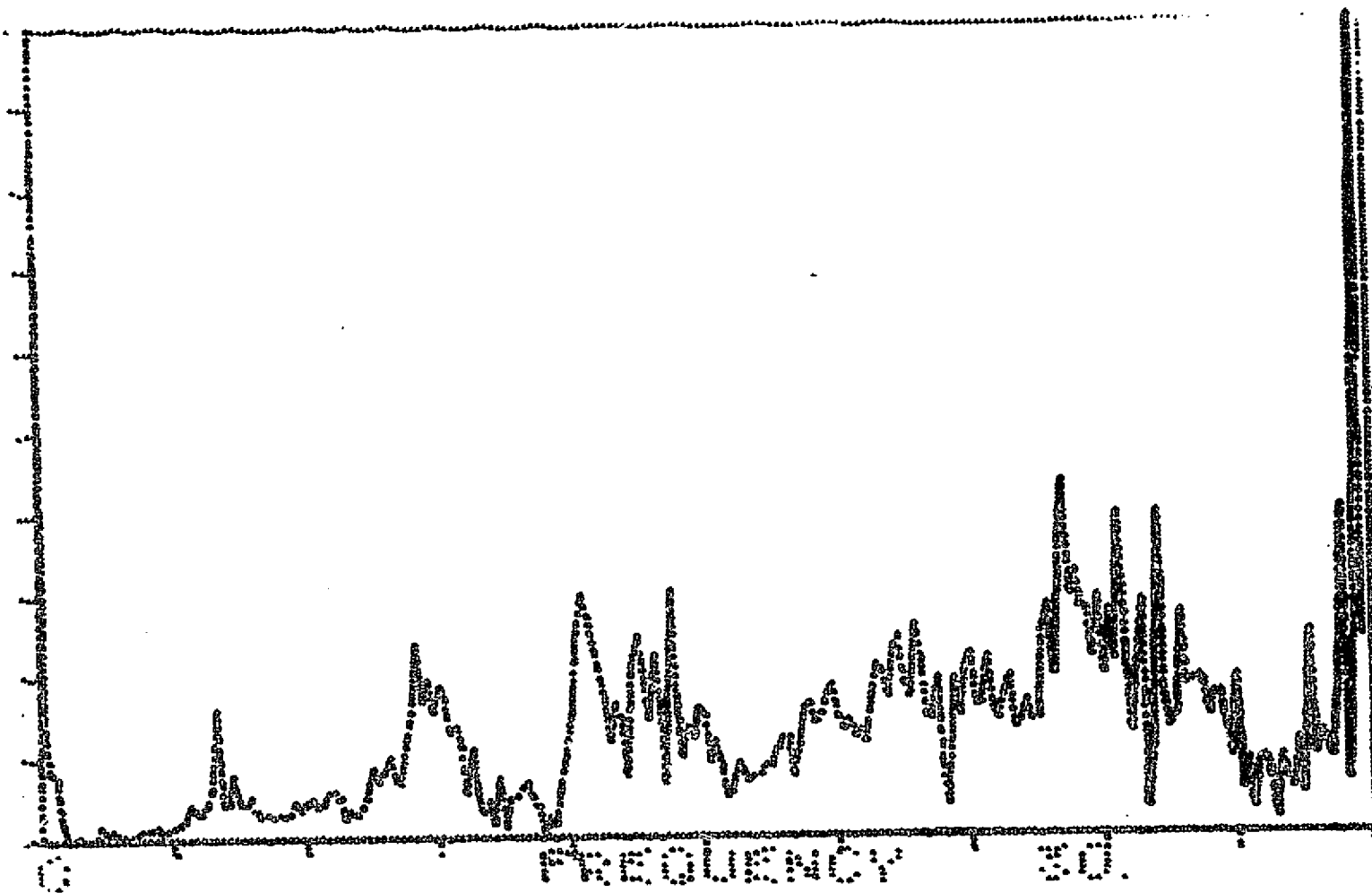
00000000

AV2/FL1

1.

mag

0.



COMPLEX

SIZE 256

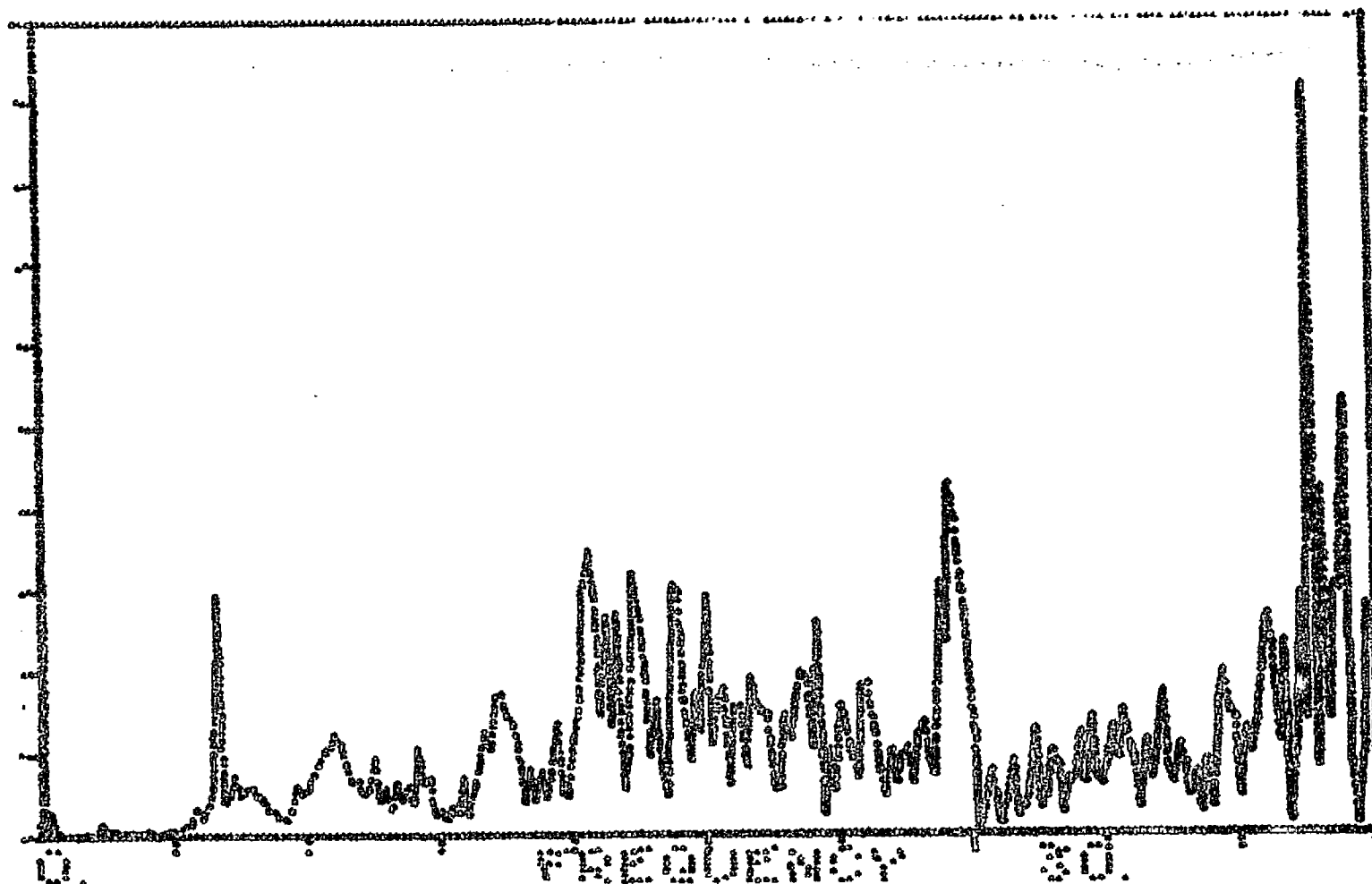
256

AV3/FL1

4.

mpg

0.



COMPLEX:

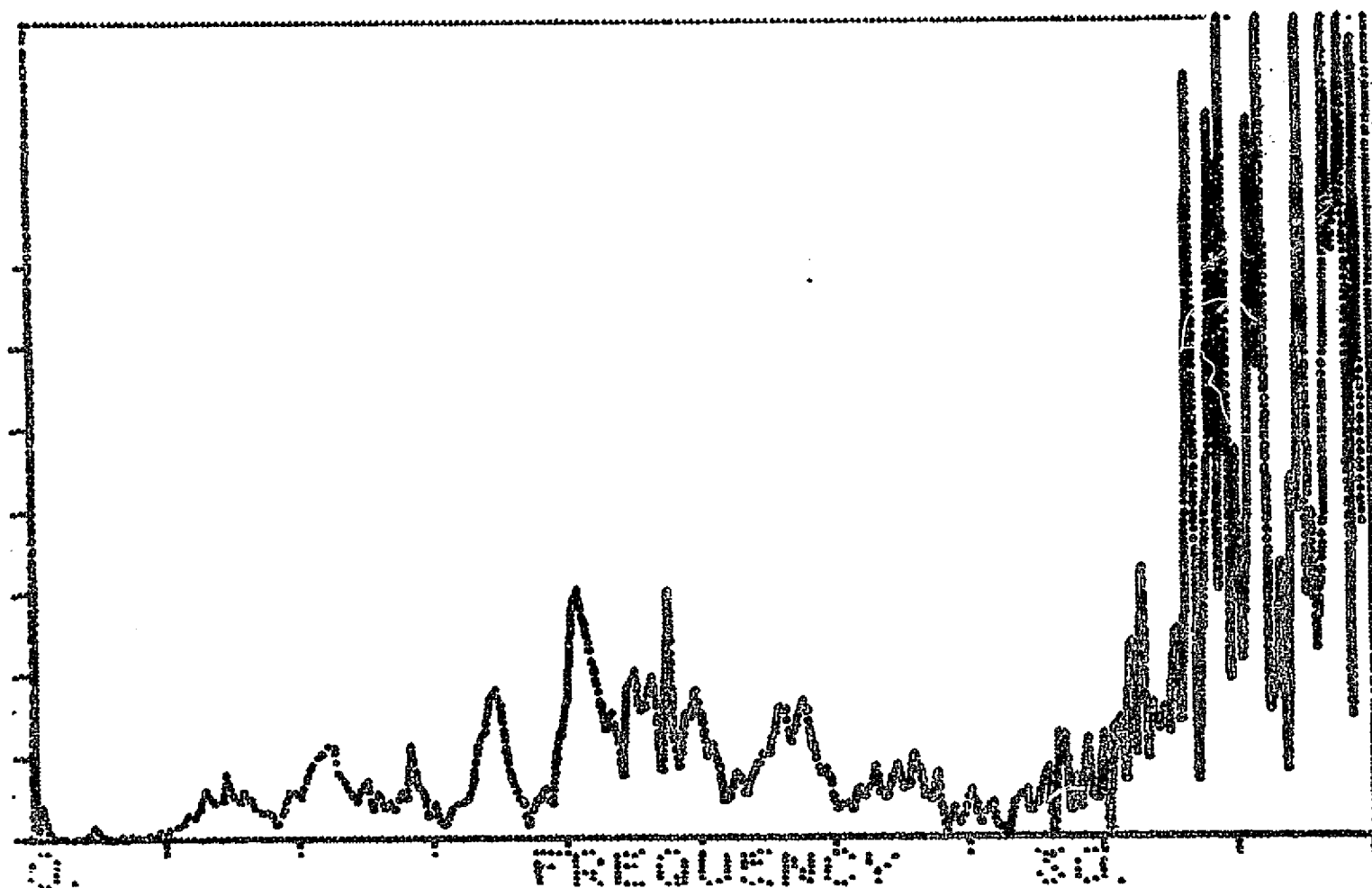
SIZE = 255

AV4/FL1

A.

17600

0.



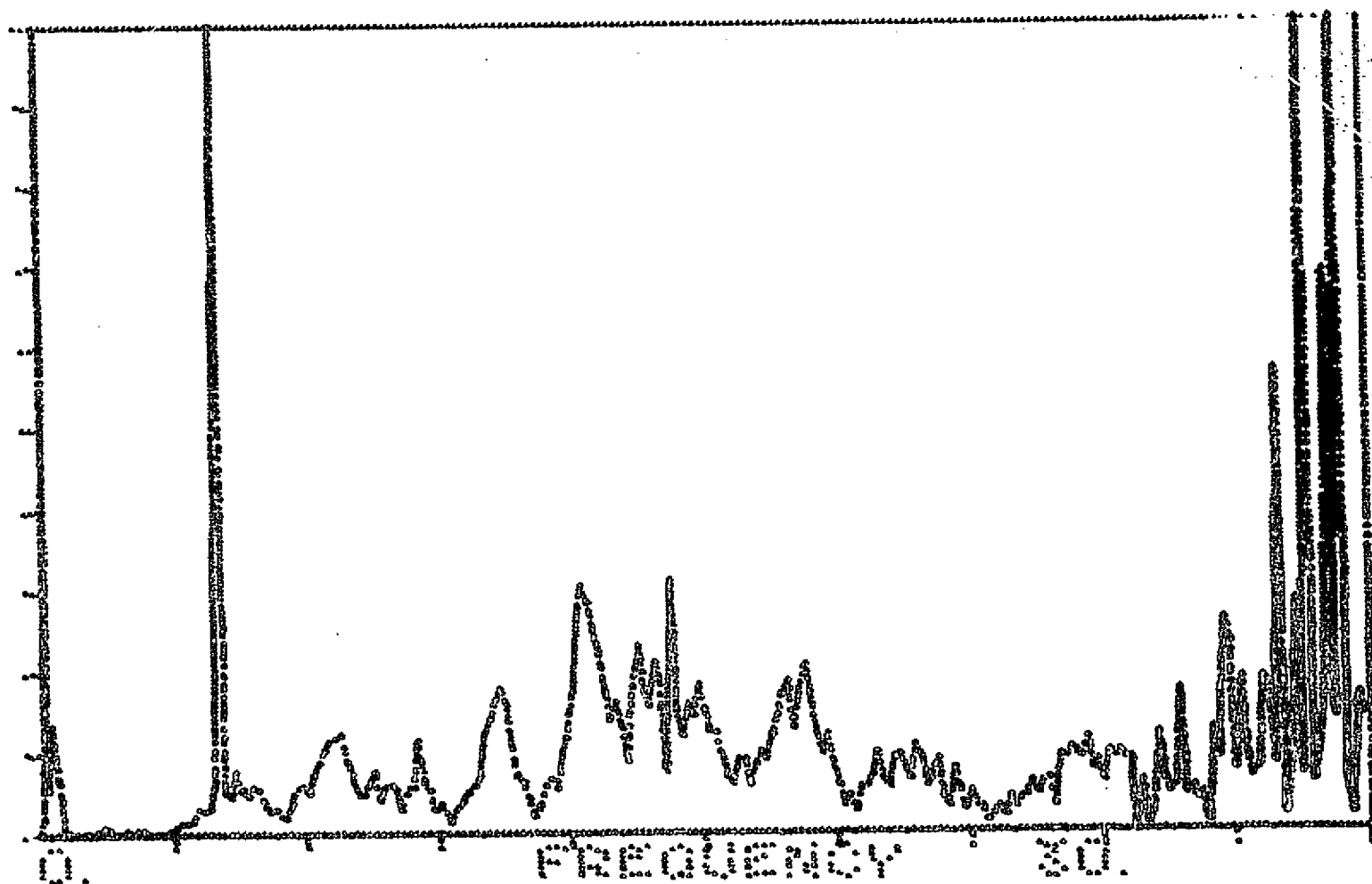
COMPLEX

SIZE= 256

4.

1962

0.



COMPLEX

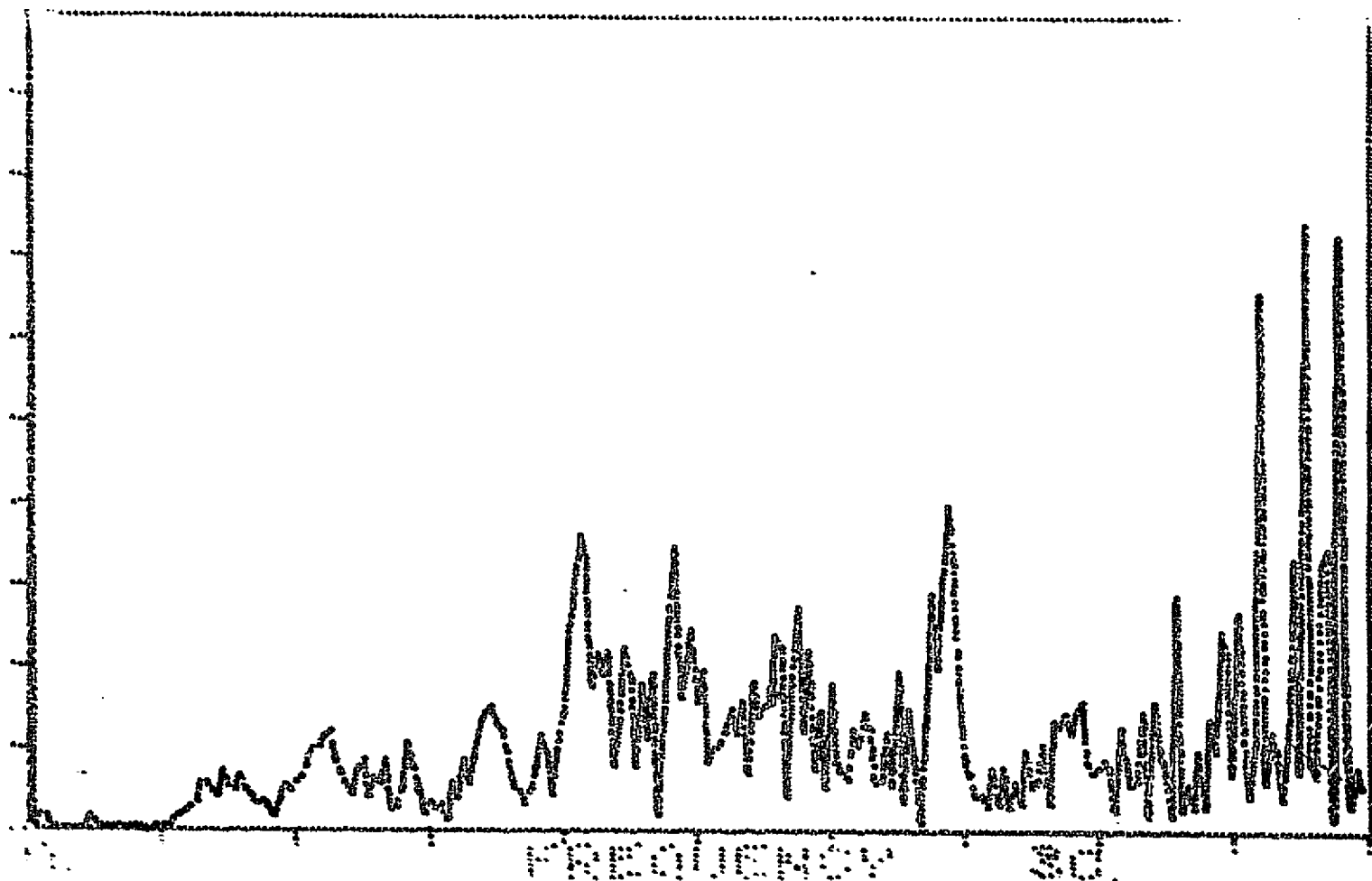
SIZE = 255

AV4/FL1

1.

mag

0.



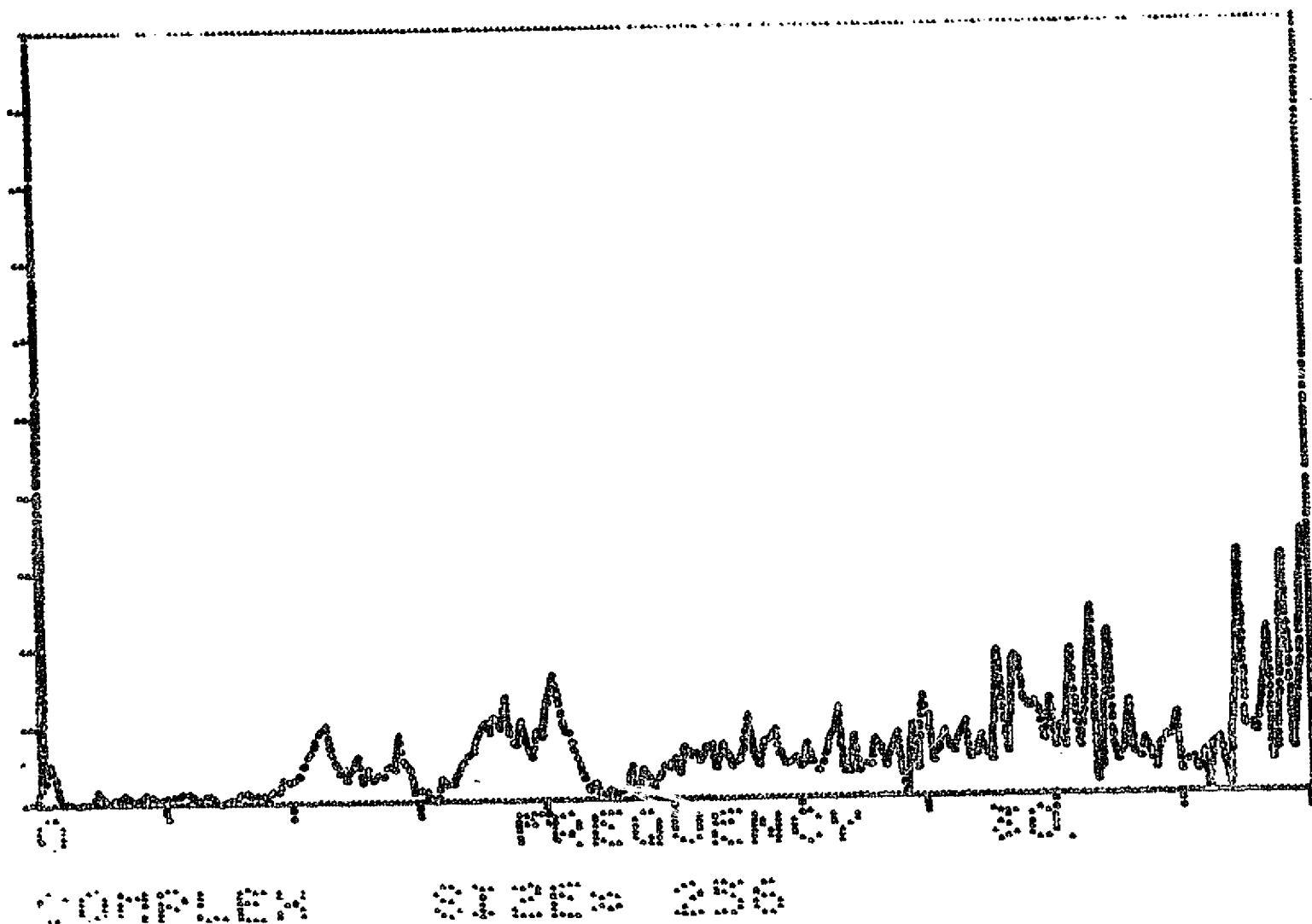
COMPLEX

81222 200

A.

1964

Q.

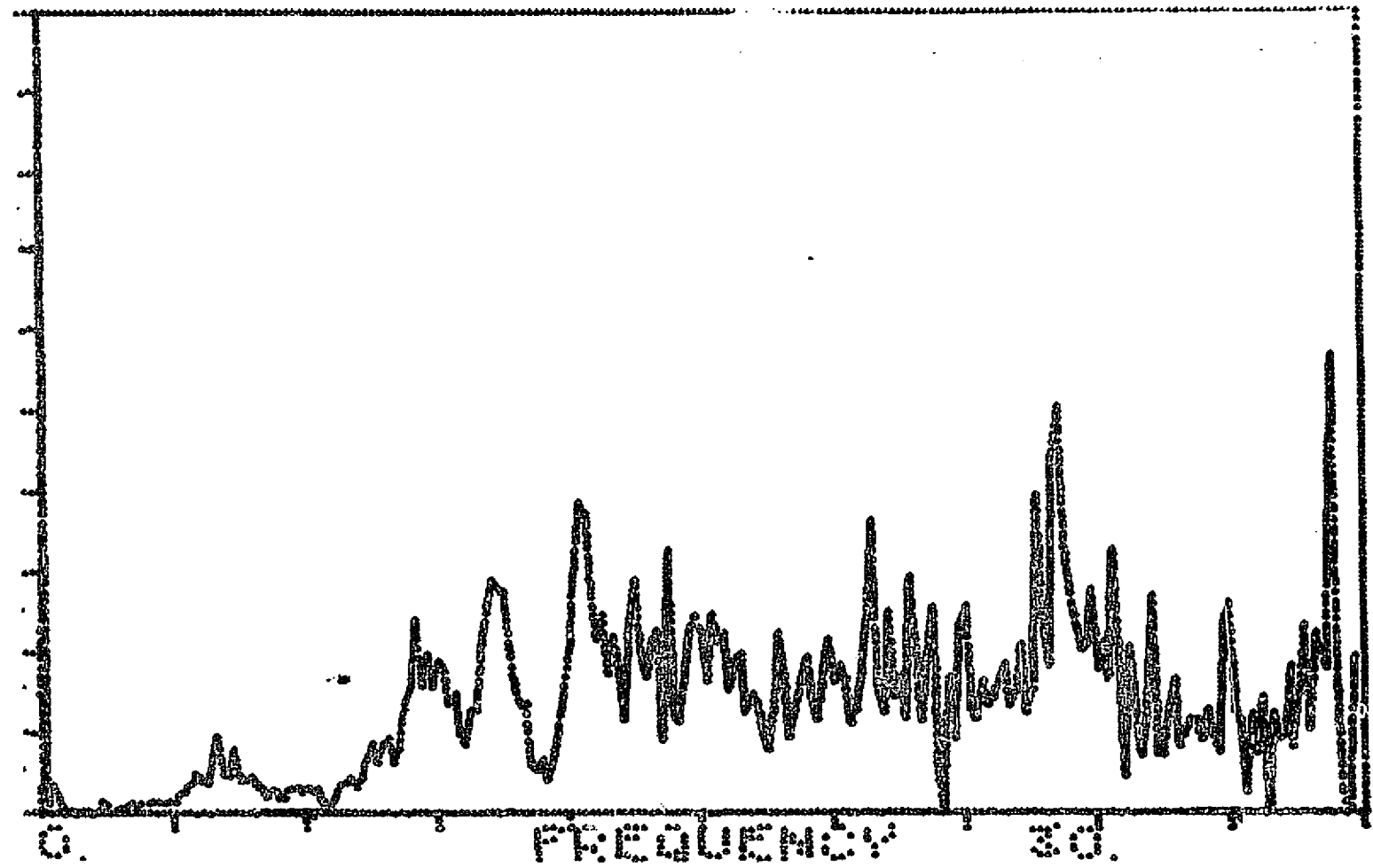


AV5/FL1

1.

hash

0.



COMPLEX

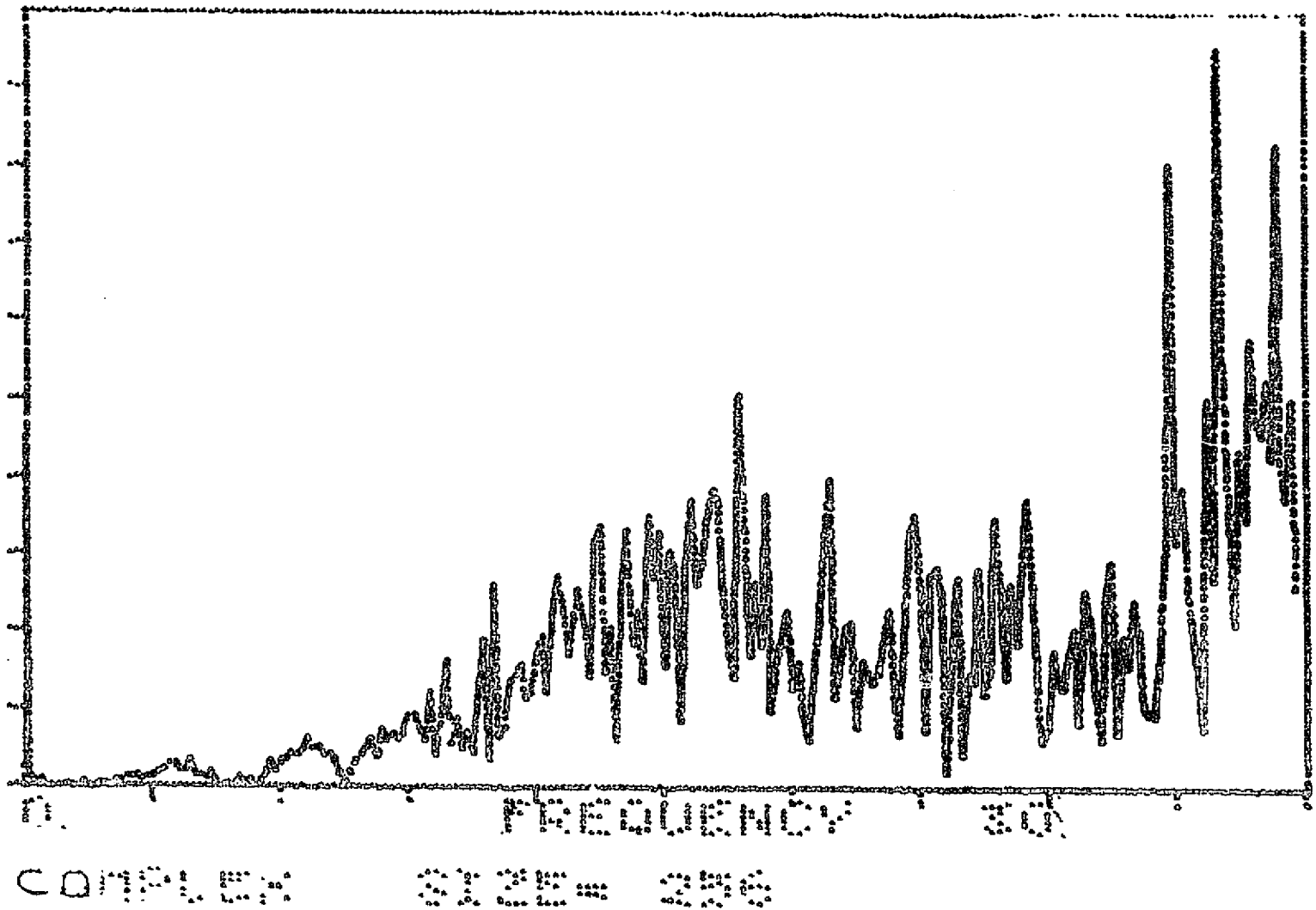
SIZE= 256

AV6/FL1

2.

mag

D.

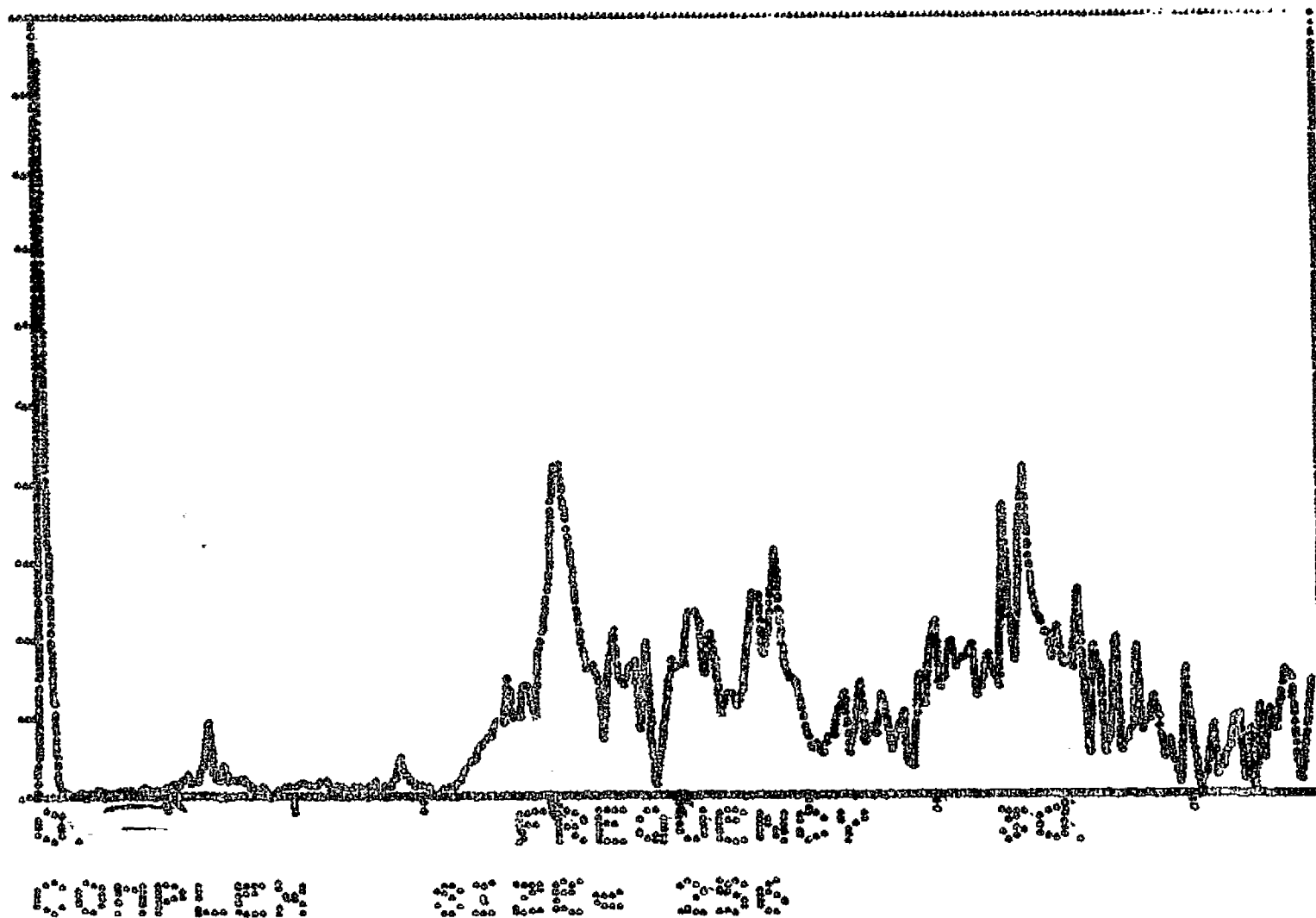


ALI/FL1

4.

182

0.



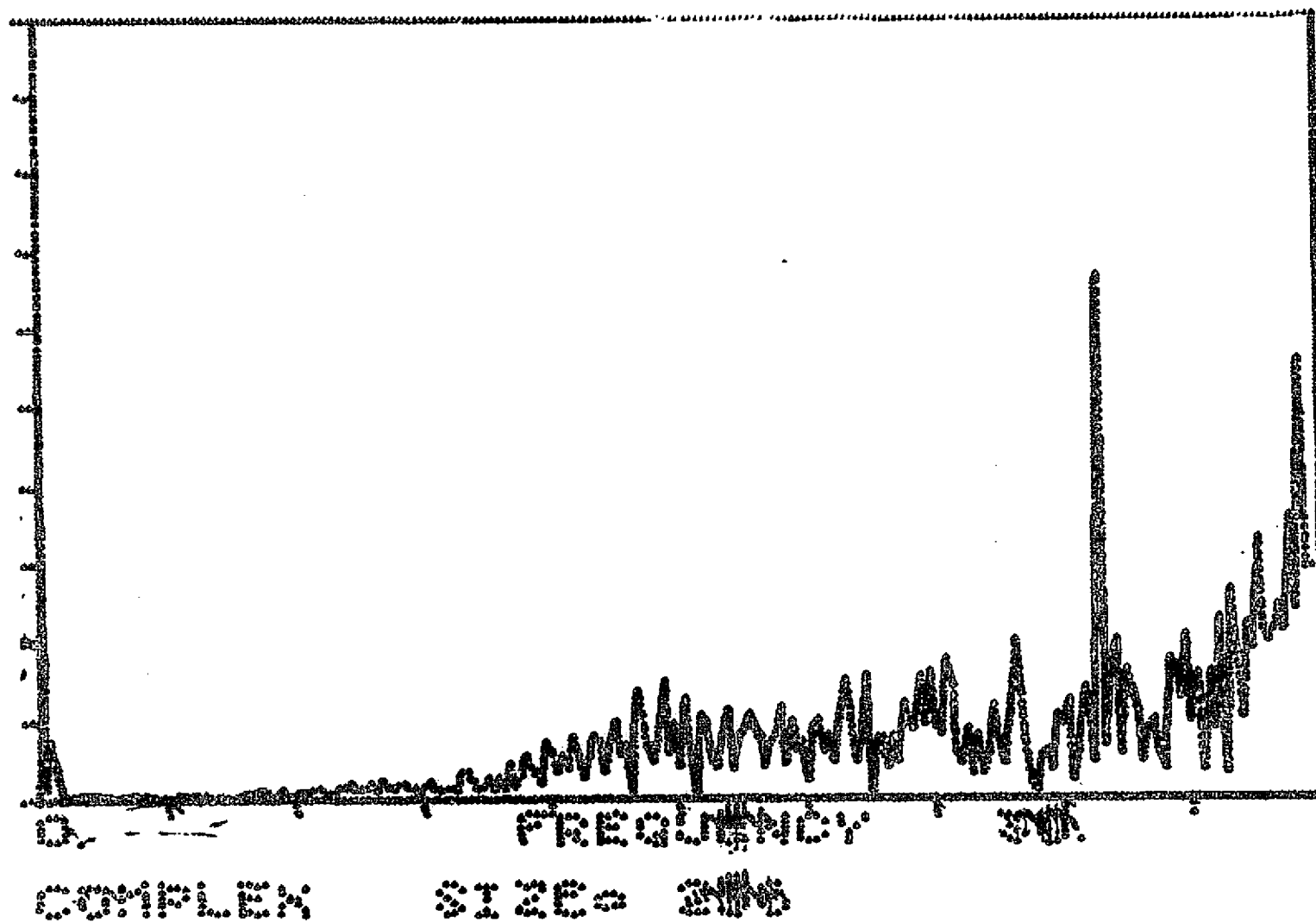
182

AL3/FL1

20.

max

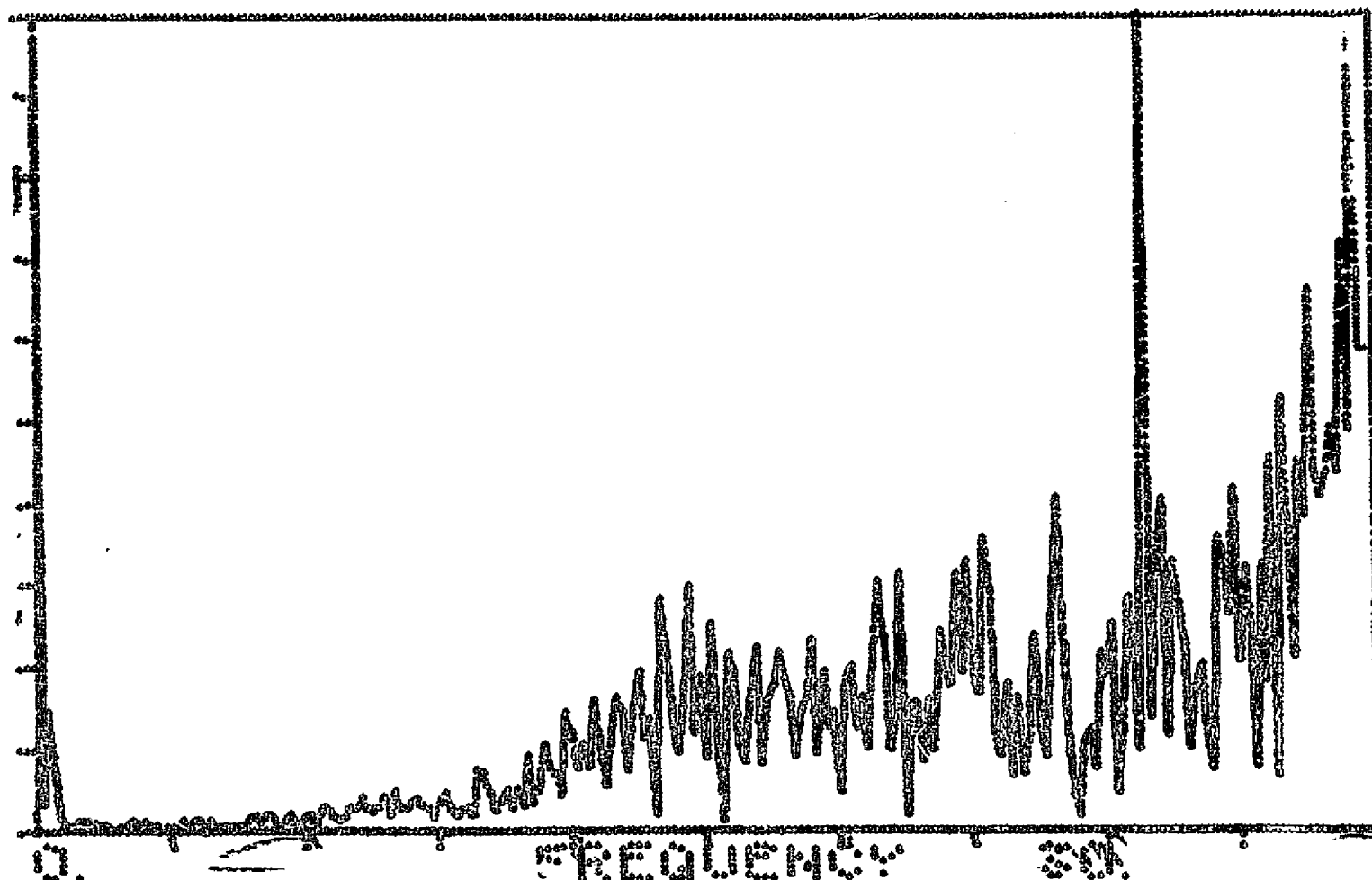
0.



10.

.1964

0.



0.000000

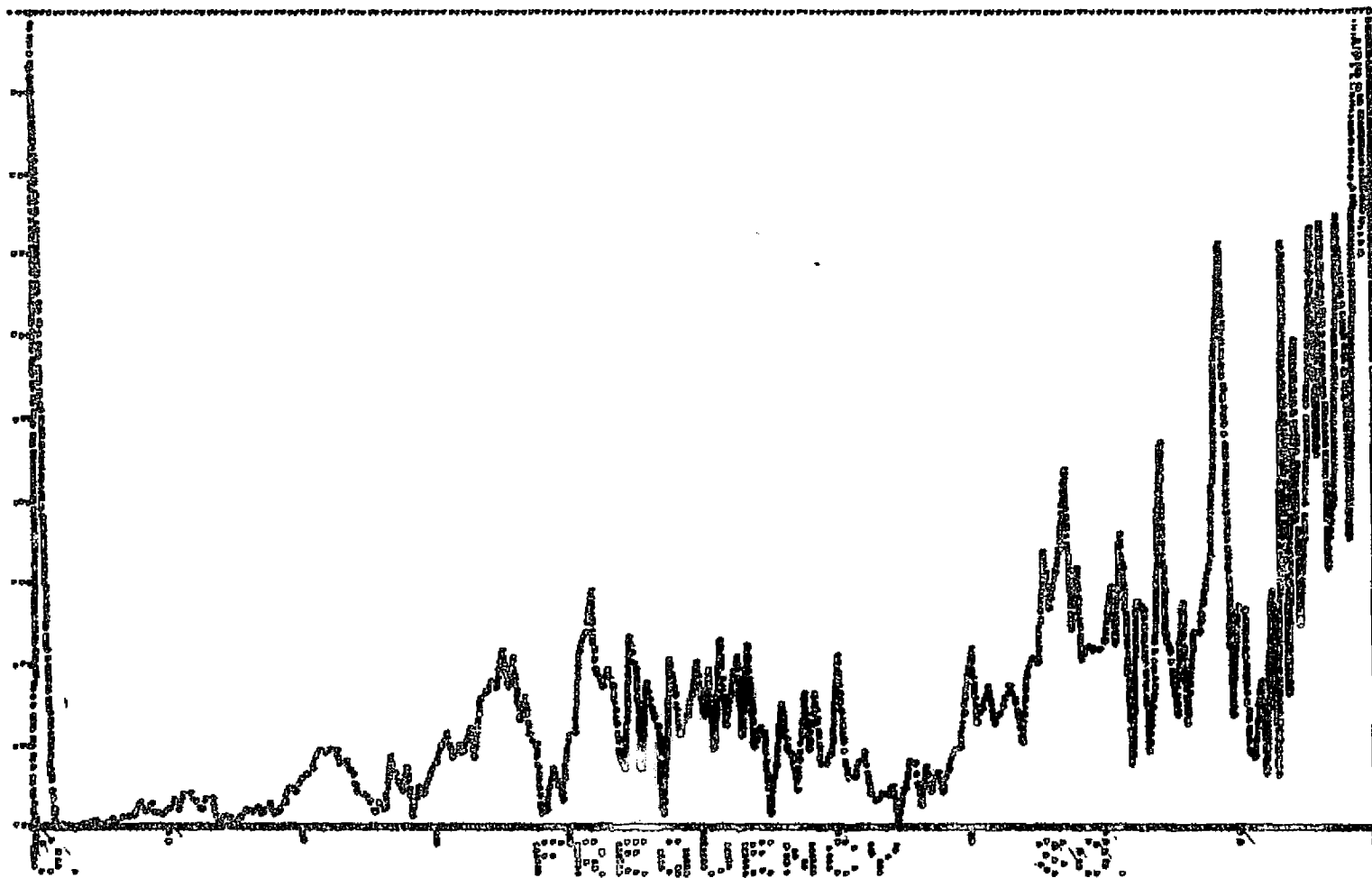
size= 256

AL6/FL1

i.

PACK

0.



COMPLEX

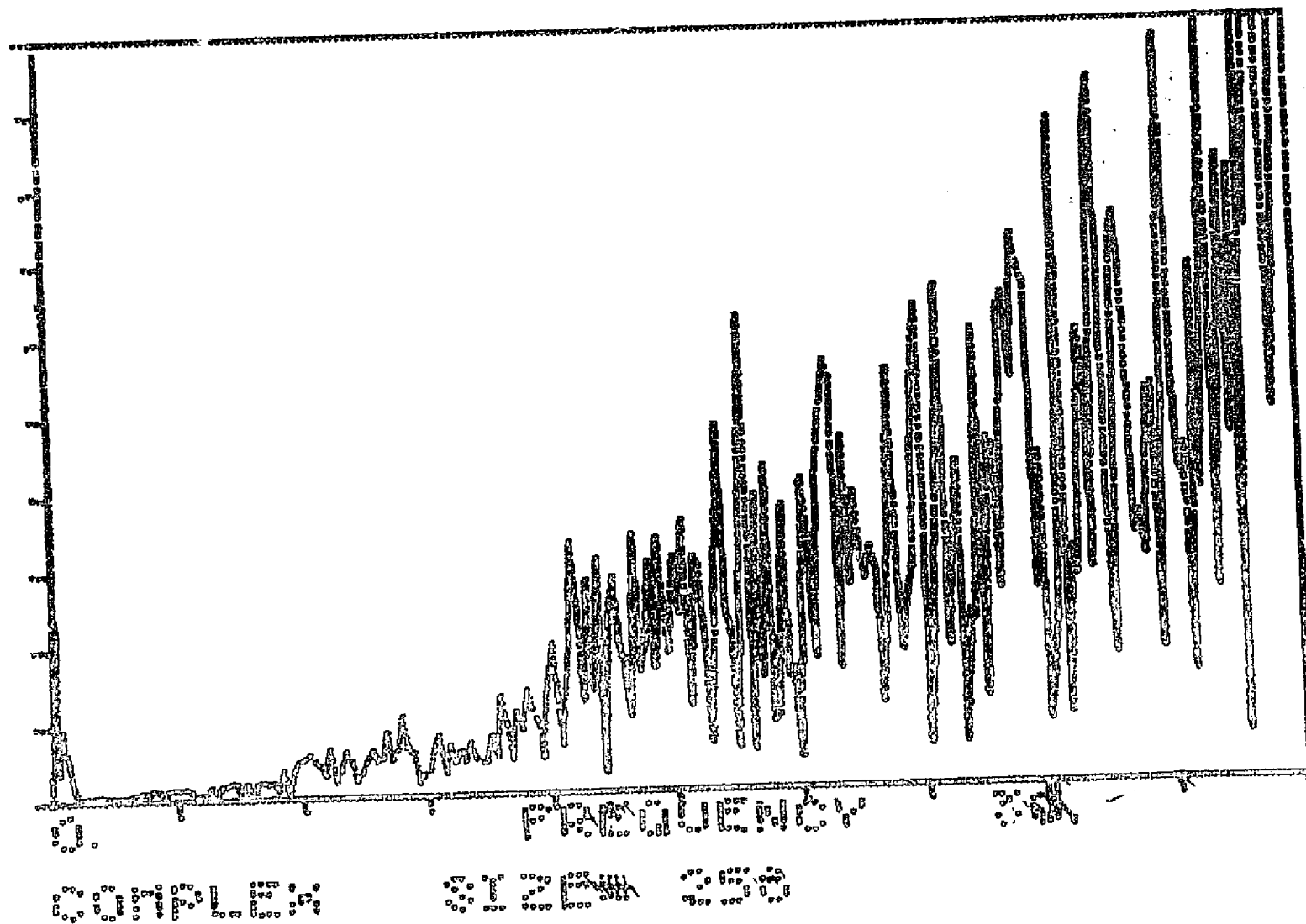
SIZE: 250

AL7/FL1

5.

FROM

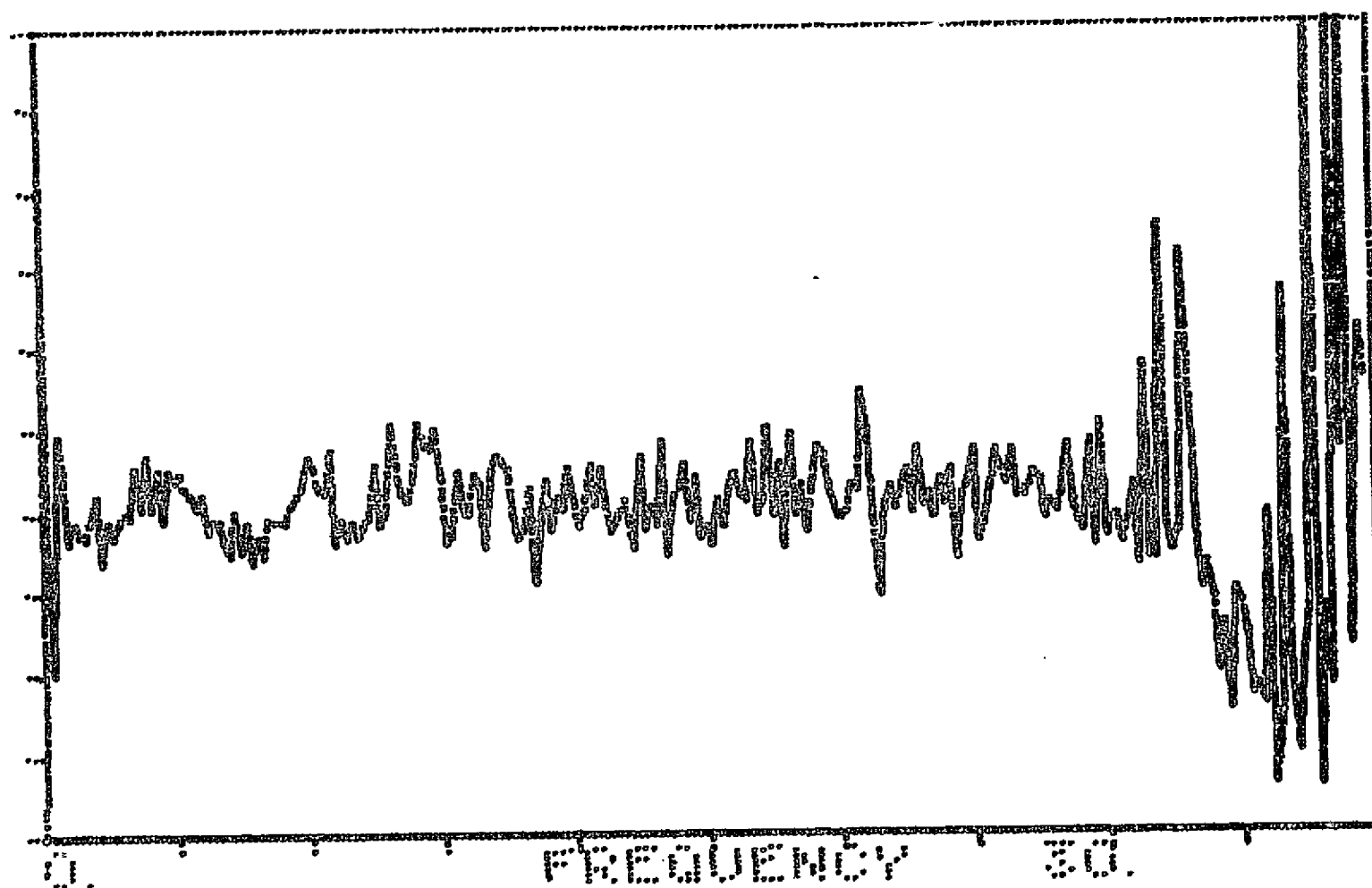
0.



5.

HIGH

0.



COMPLEX

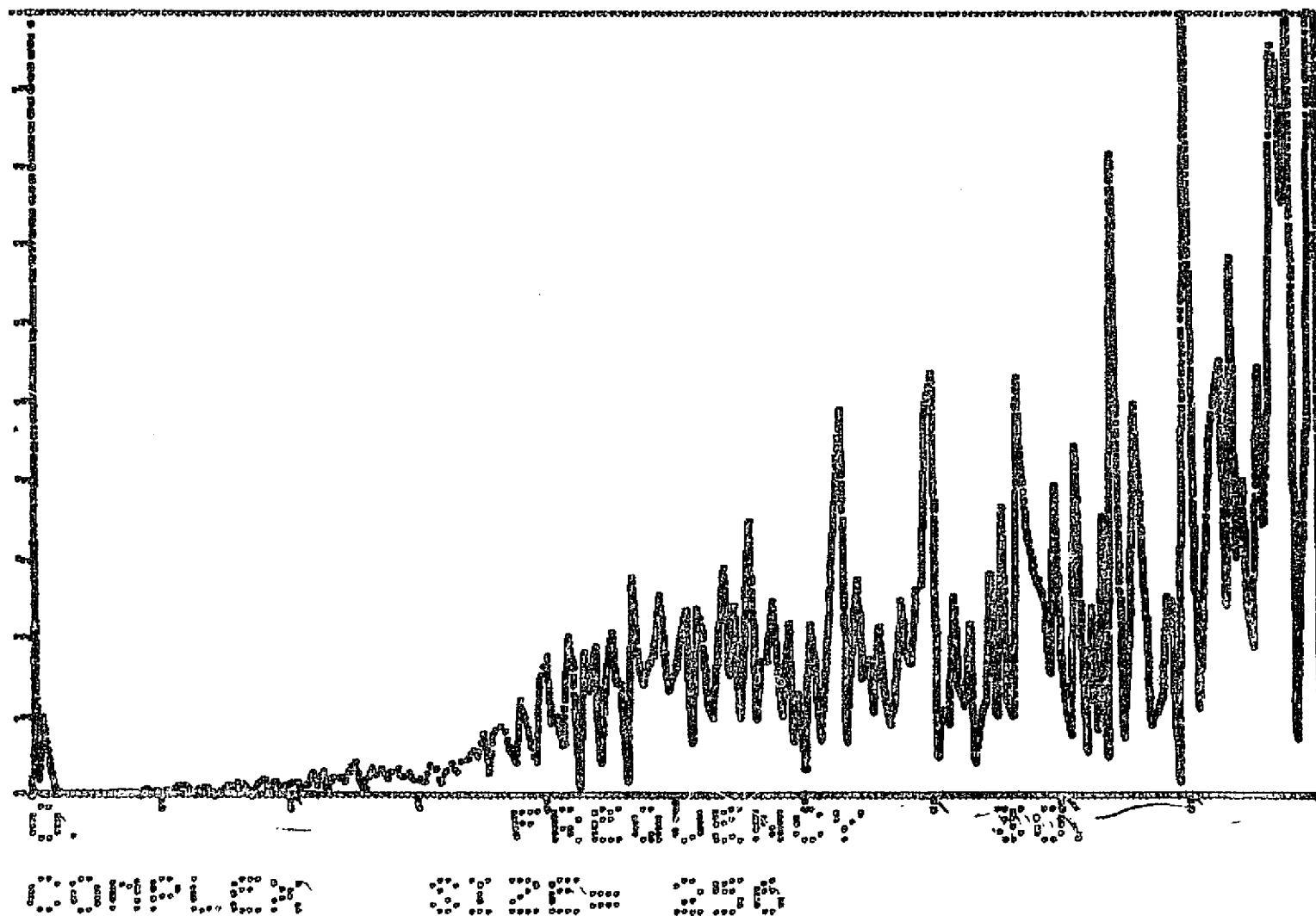
SIZE= 256

Δ P/FL1

40.

17664

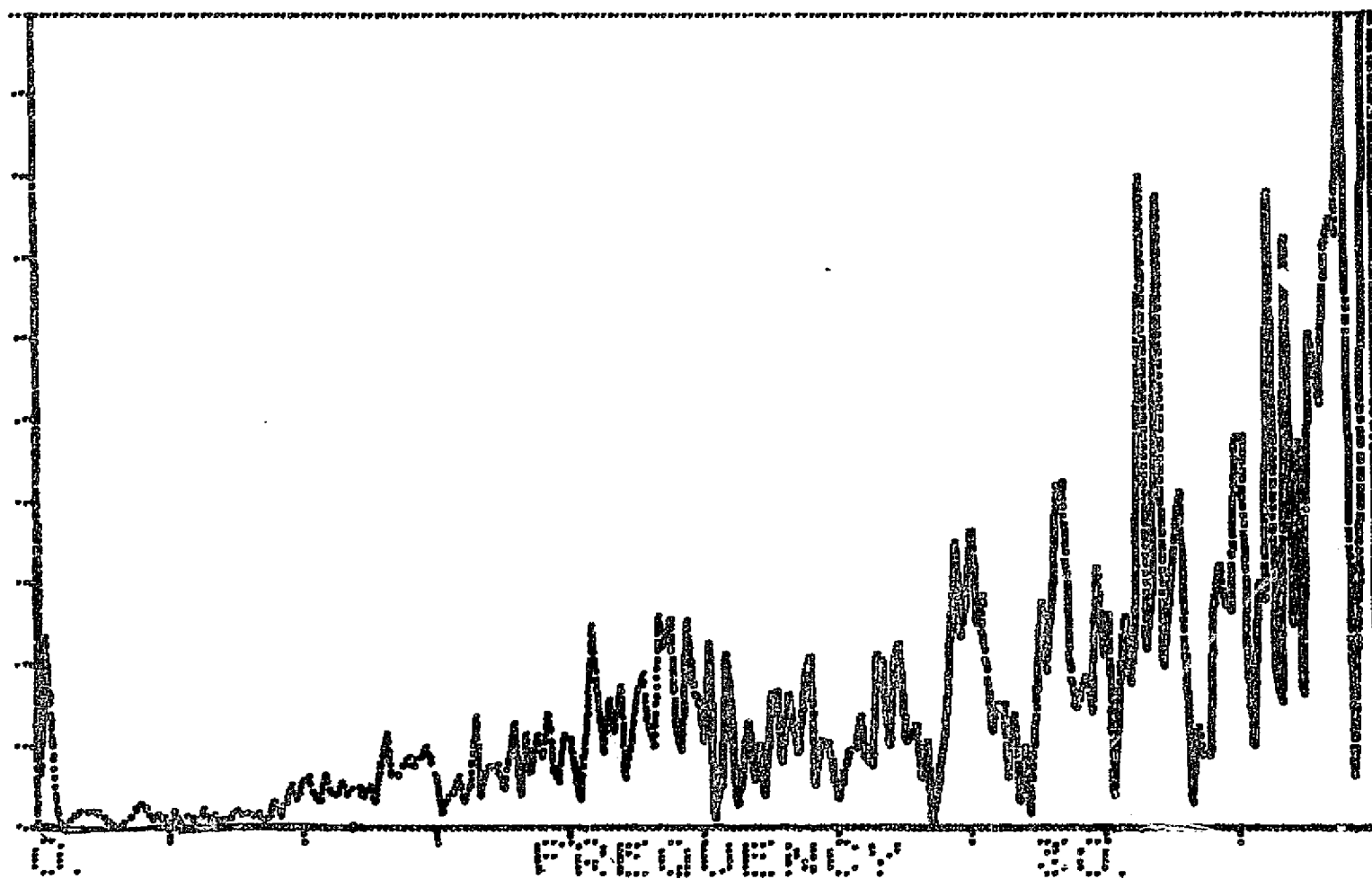
0.



10.

11.000

0.



COMPLEX

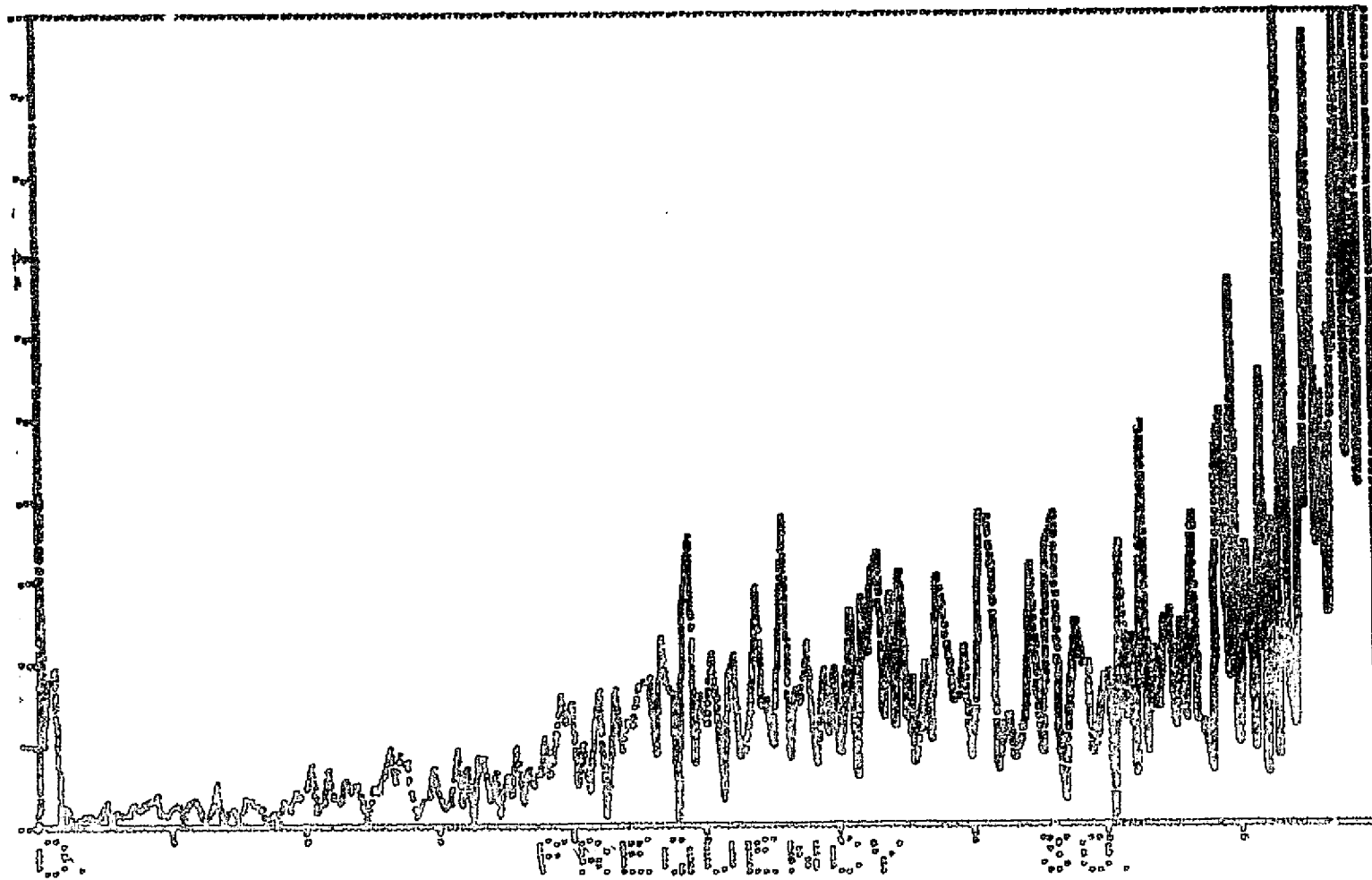
SIZE= 255

AL5/FL1

10.

1000

0



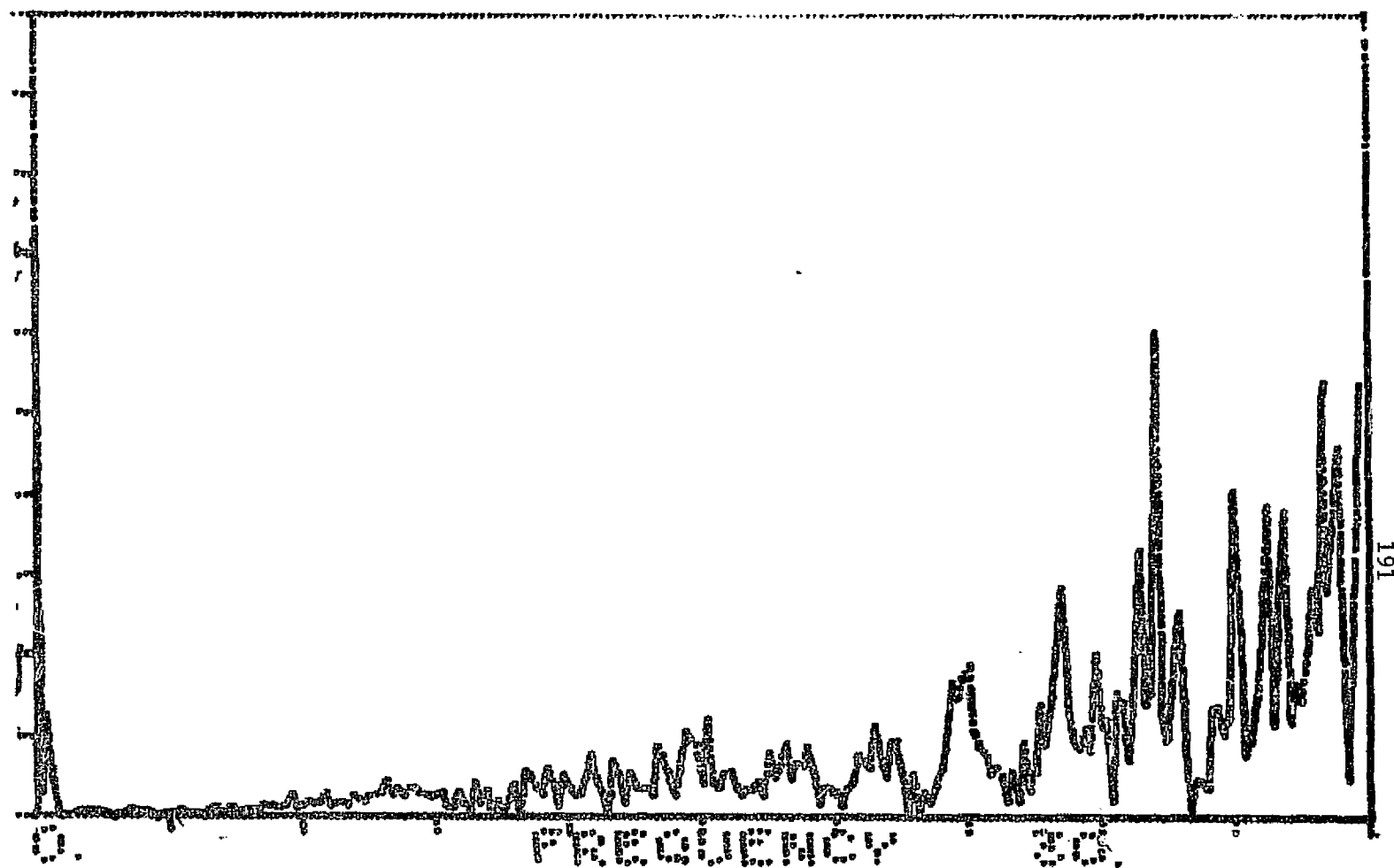
AMPLITUDE

FREQUENCY

30.

11954

9.



COMPLEX

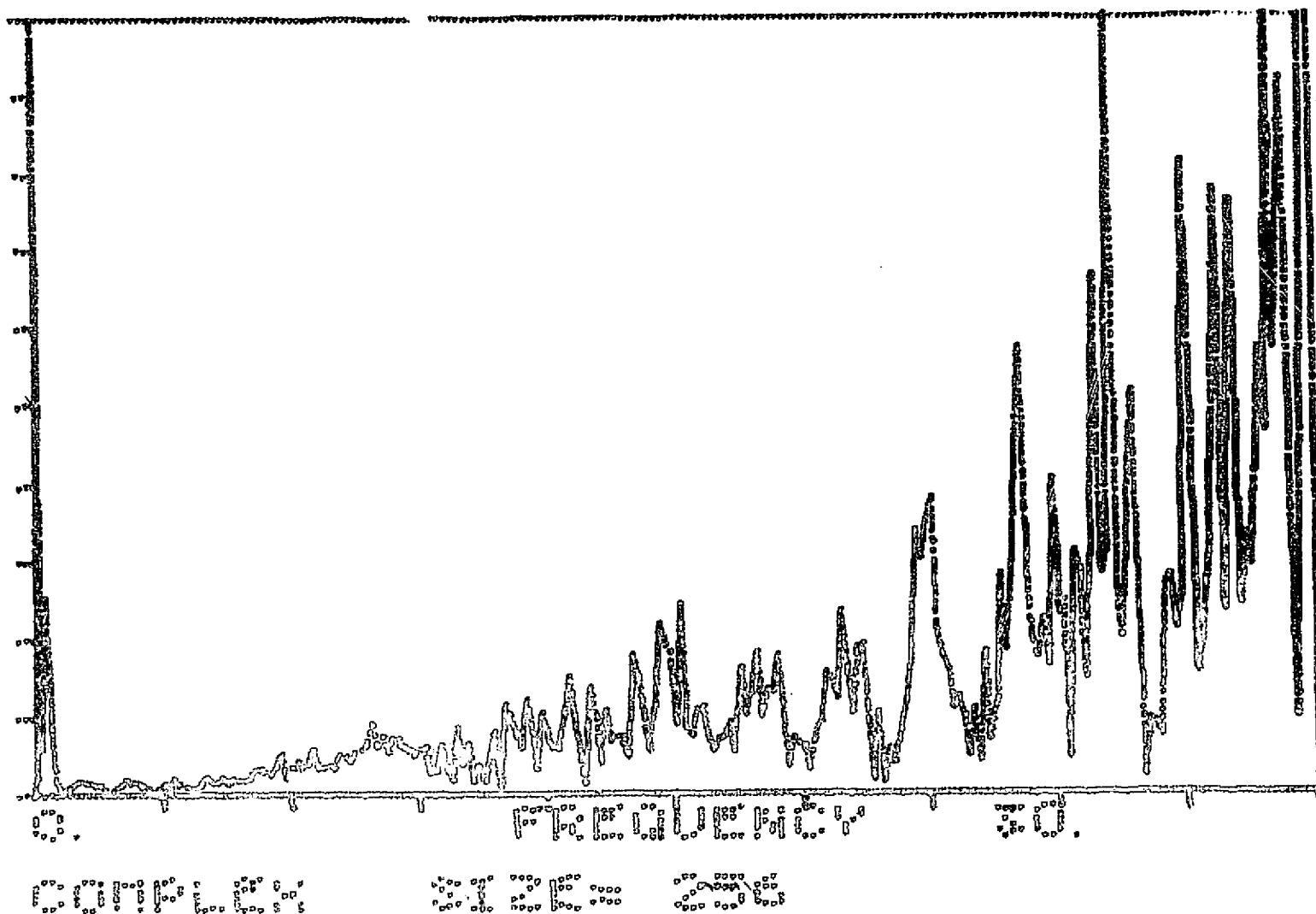
SIZE= 155

AL9/FL1

10.

11000

01

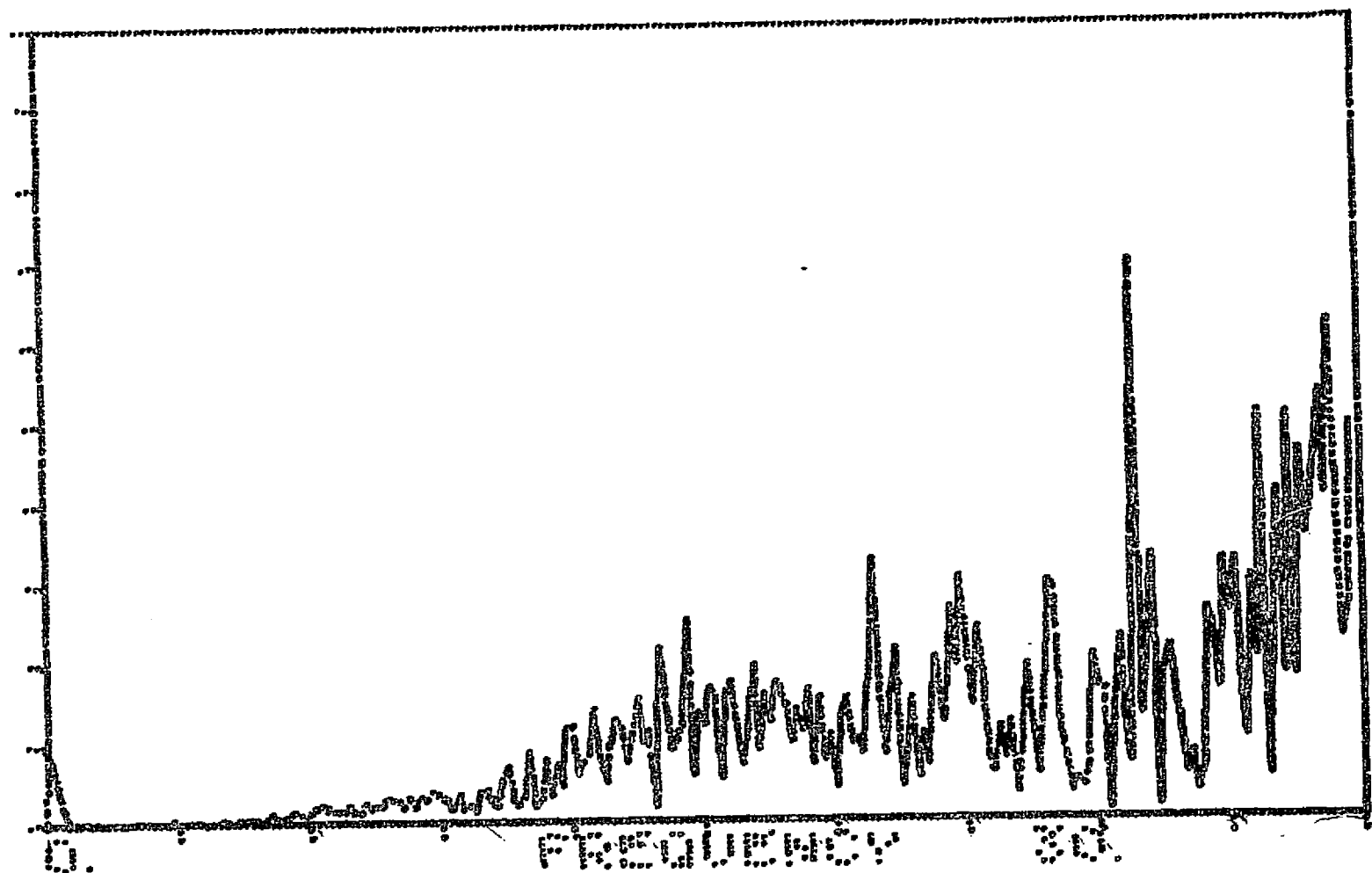


AL9/FL1

10.

1968

0.



193

COMPLEX

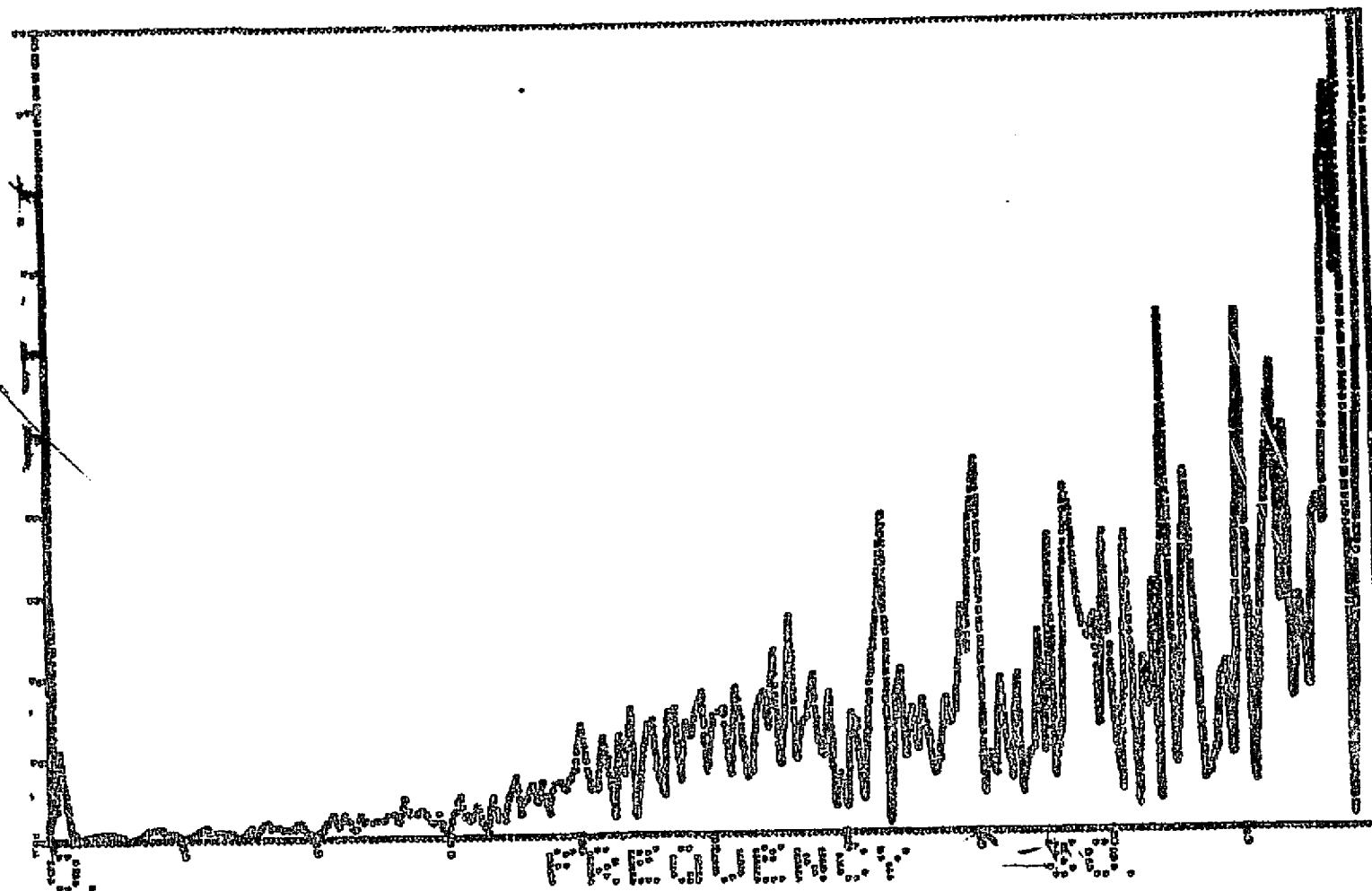
SIZE= 256

AL10/FL1

30.

MAGN

0.



COMPLEX

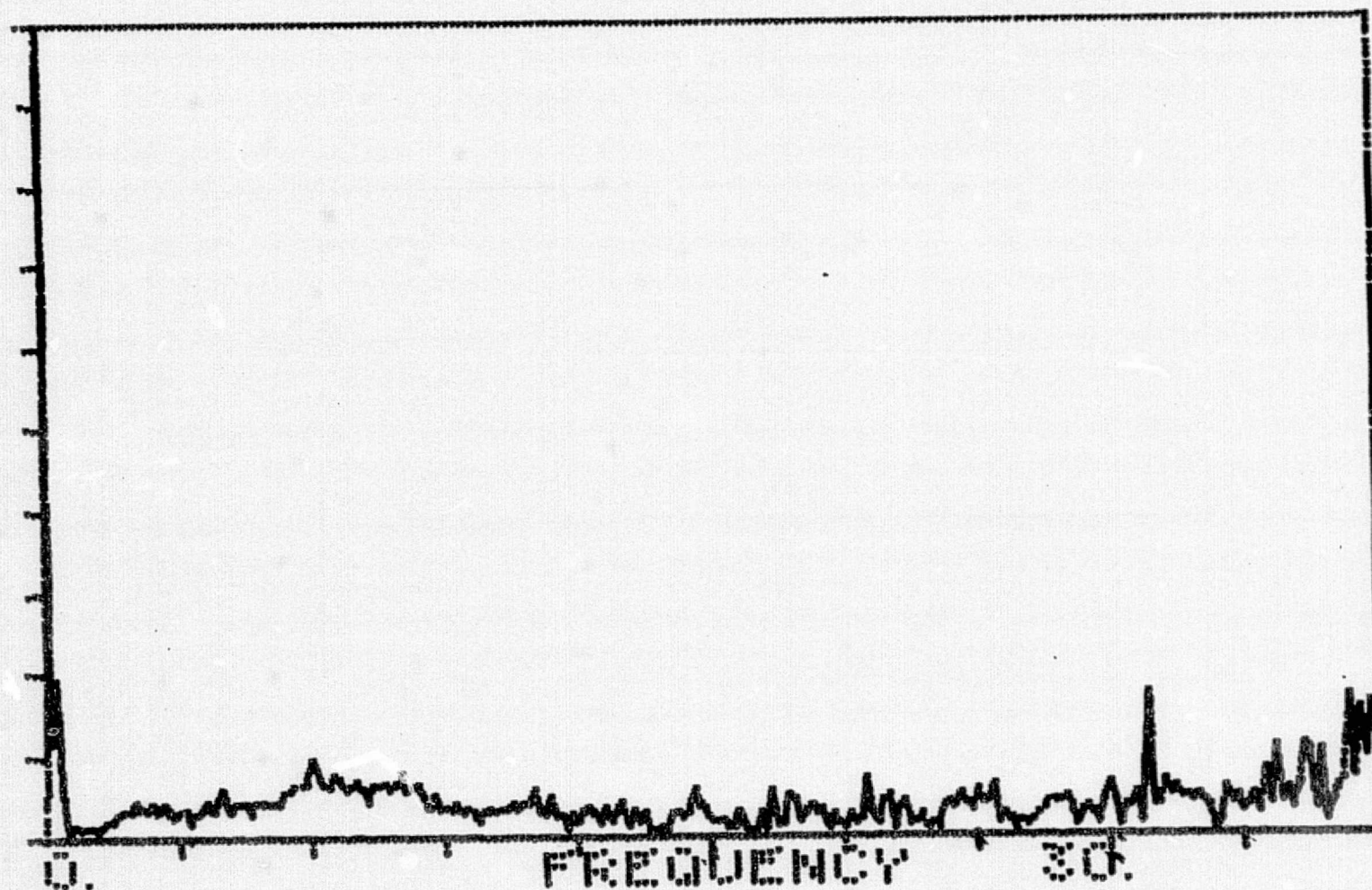
SIZE: 2048

AL12/FL1

. 5

MAGN

0.



COMPLEX

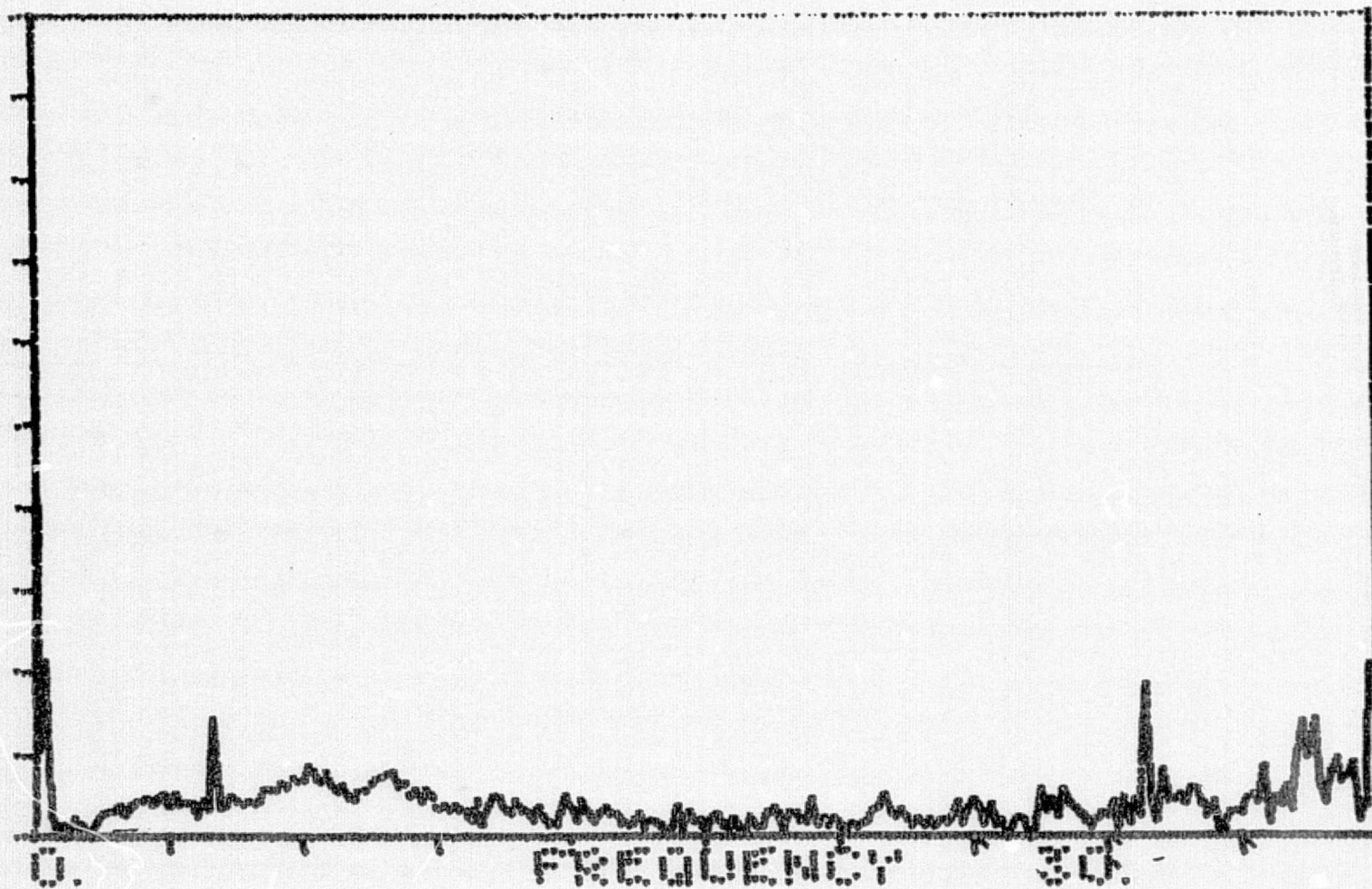
SIZE= 255

DL1/FL1

. 5

MAGN

0.



COMPLEX

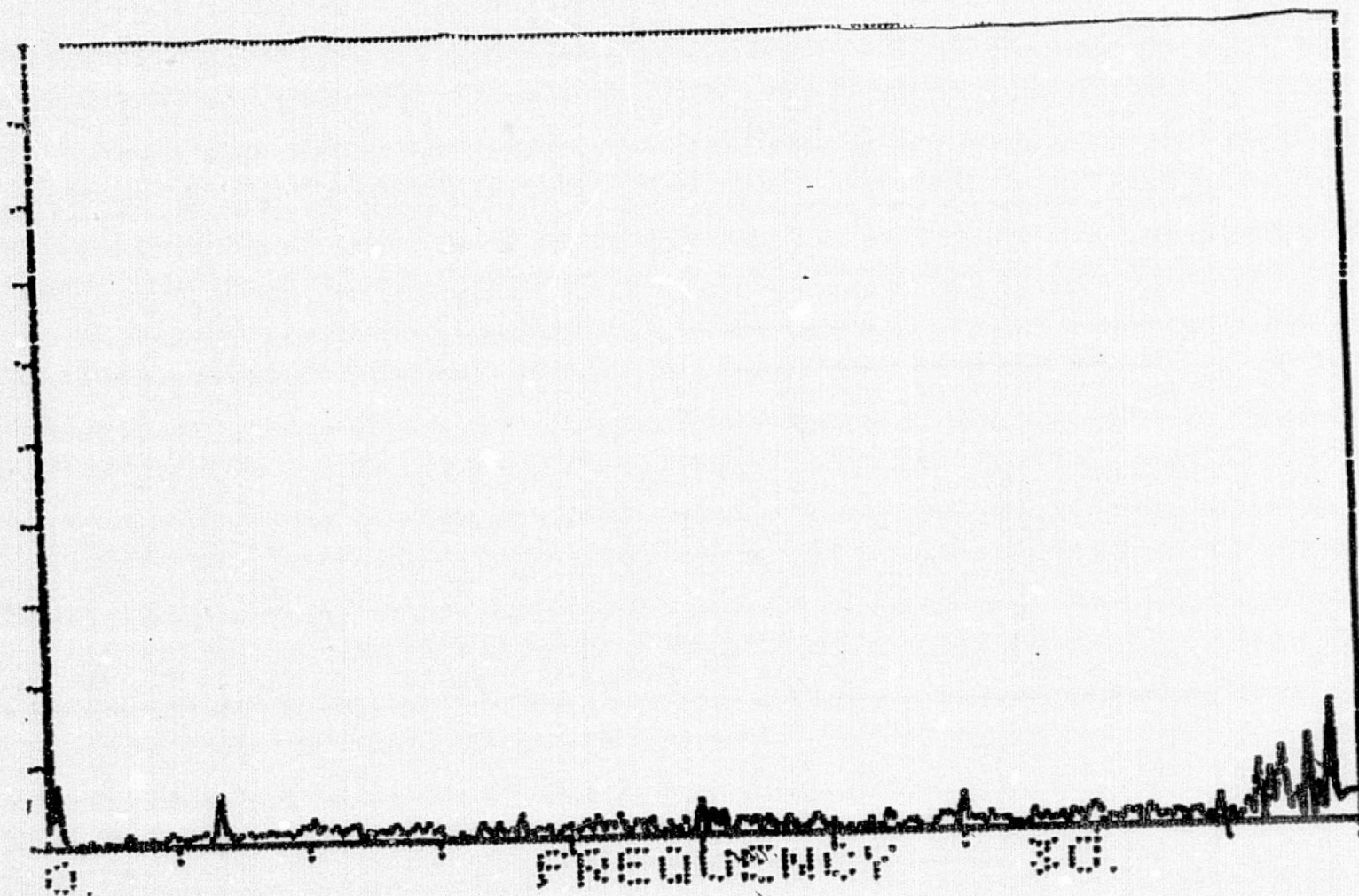
SIZE= 256

DL2/FL1

. 5

MACH

0.



SAMPLE

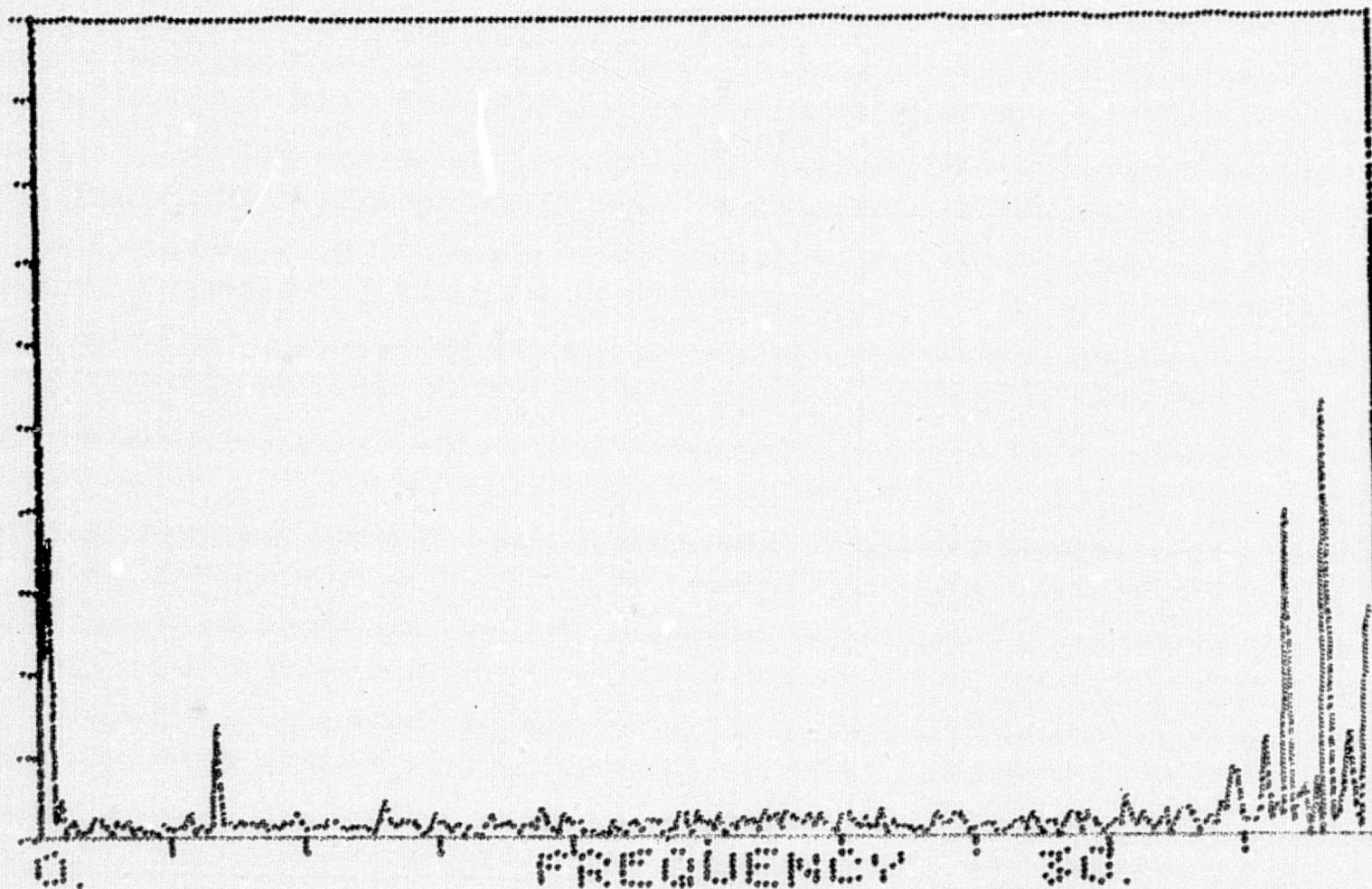
SIZE = 256

DL3/FL1

. 5

MAGN

0.



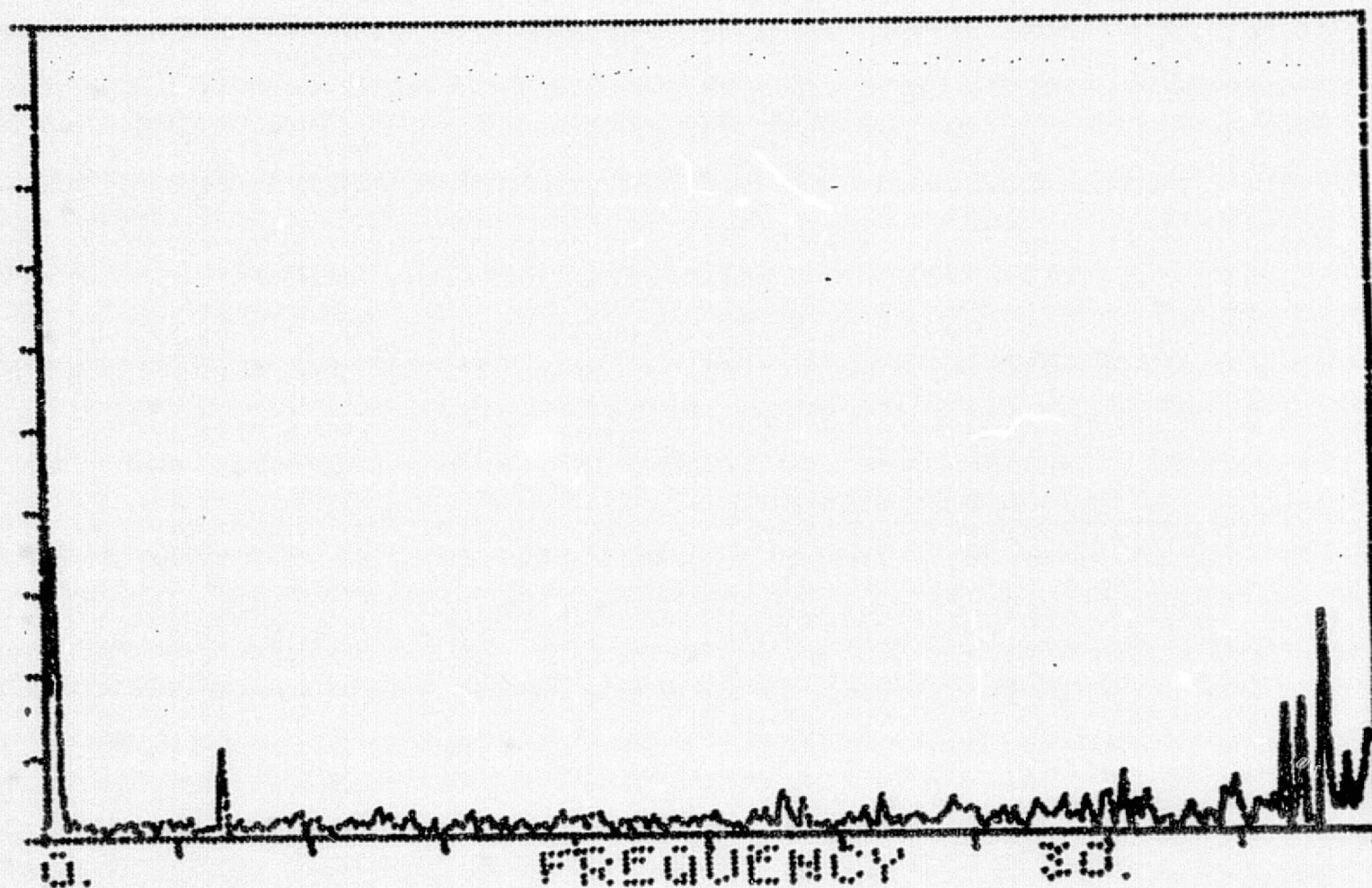
COMPLEX

SIZE= 256

DL4/FL1

. 5

MAGN



COMPLEX

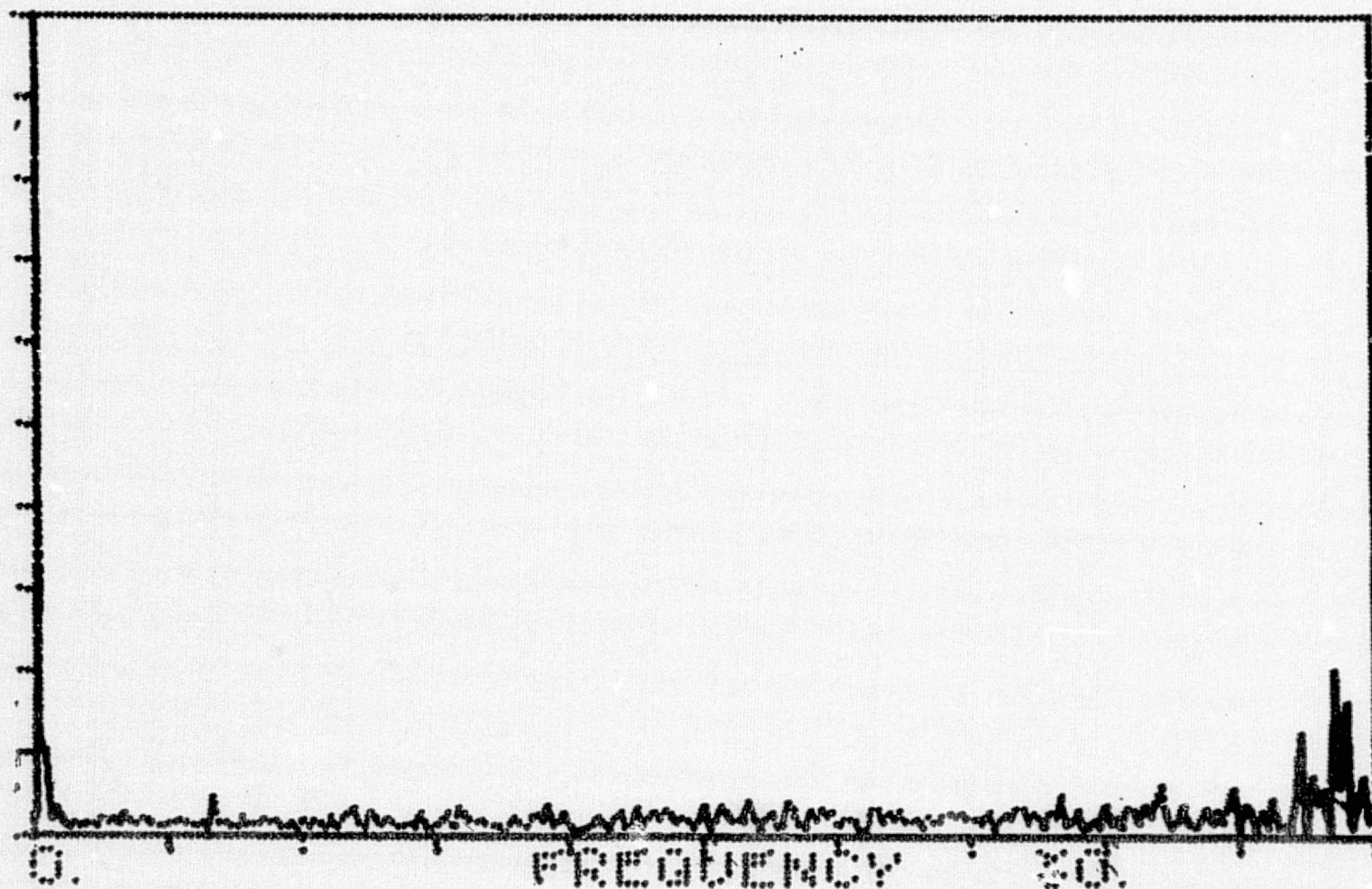
SIZE= 256

DL5/FL1

. 5

MAGN

0.



COMPLEX

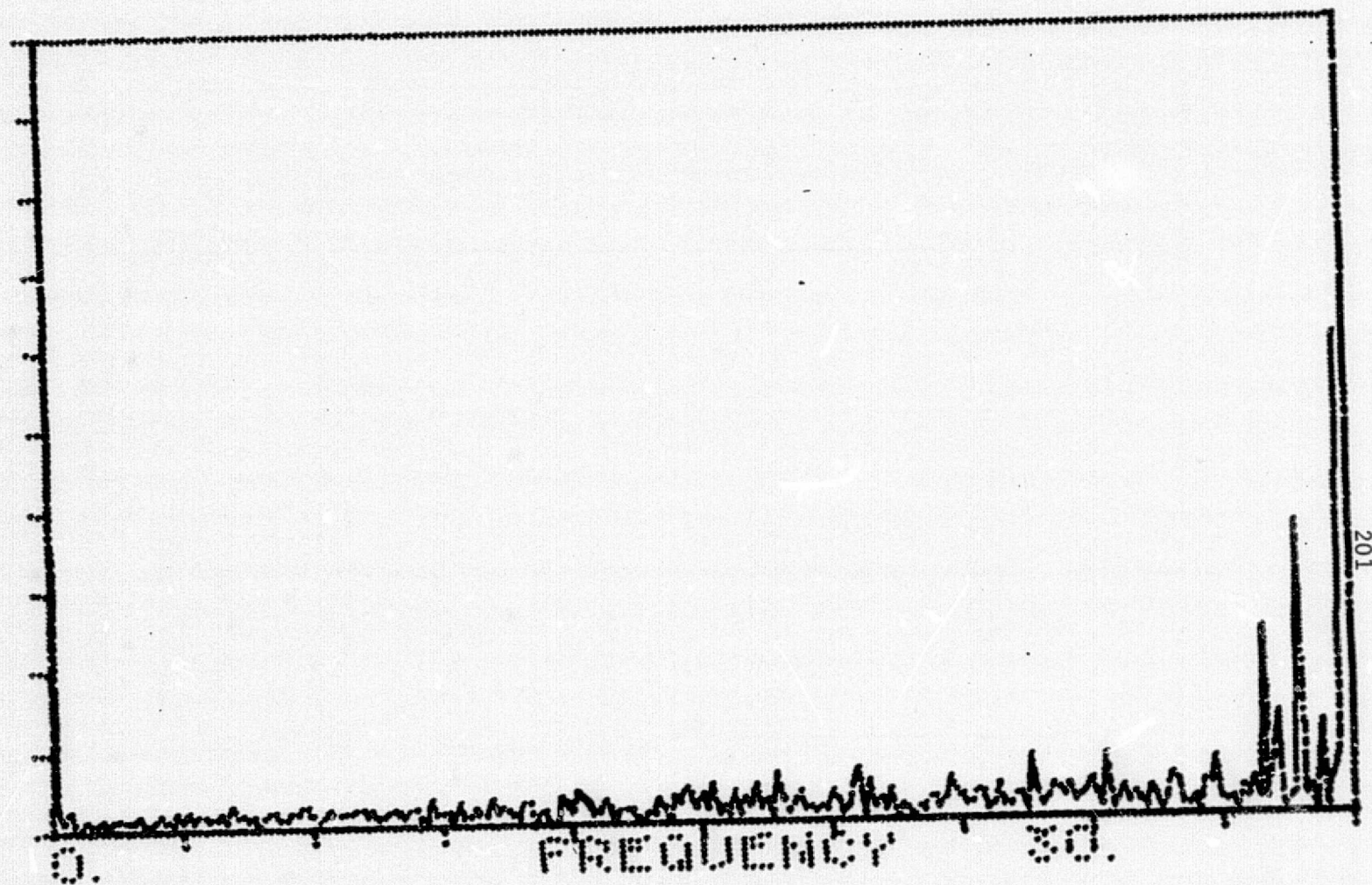
SIZE= 256

DL6/FL1

. 5

MAGN

0.



COMPLEX

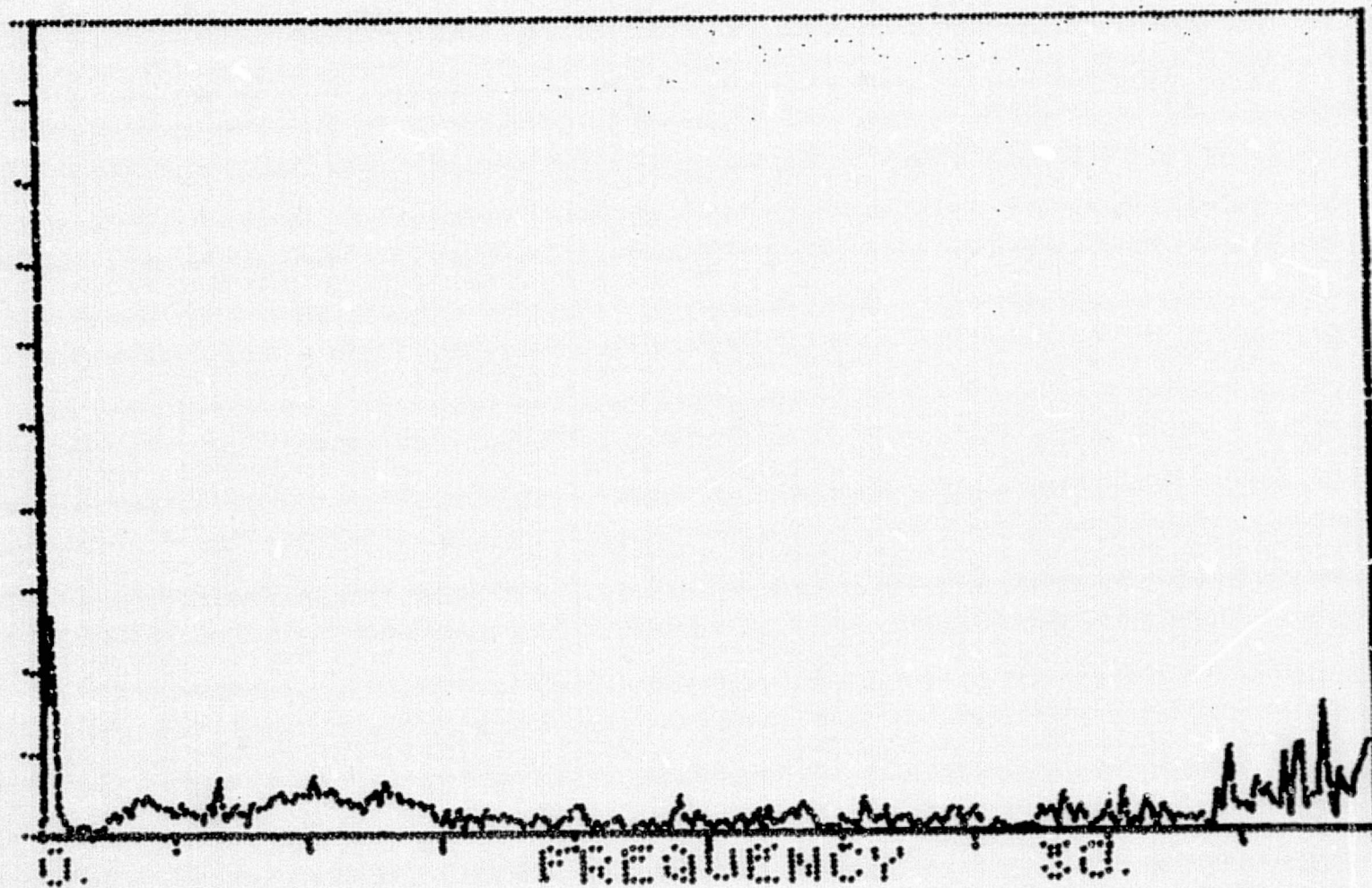
SIZE= 256

DL7/FL1

5

MAGN

0.



COMPLEX

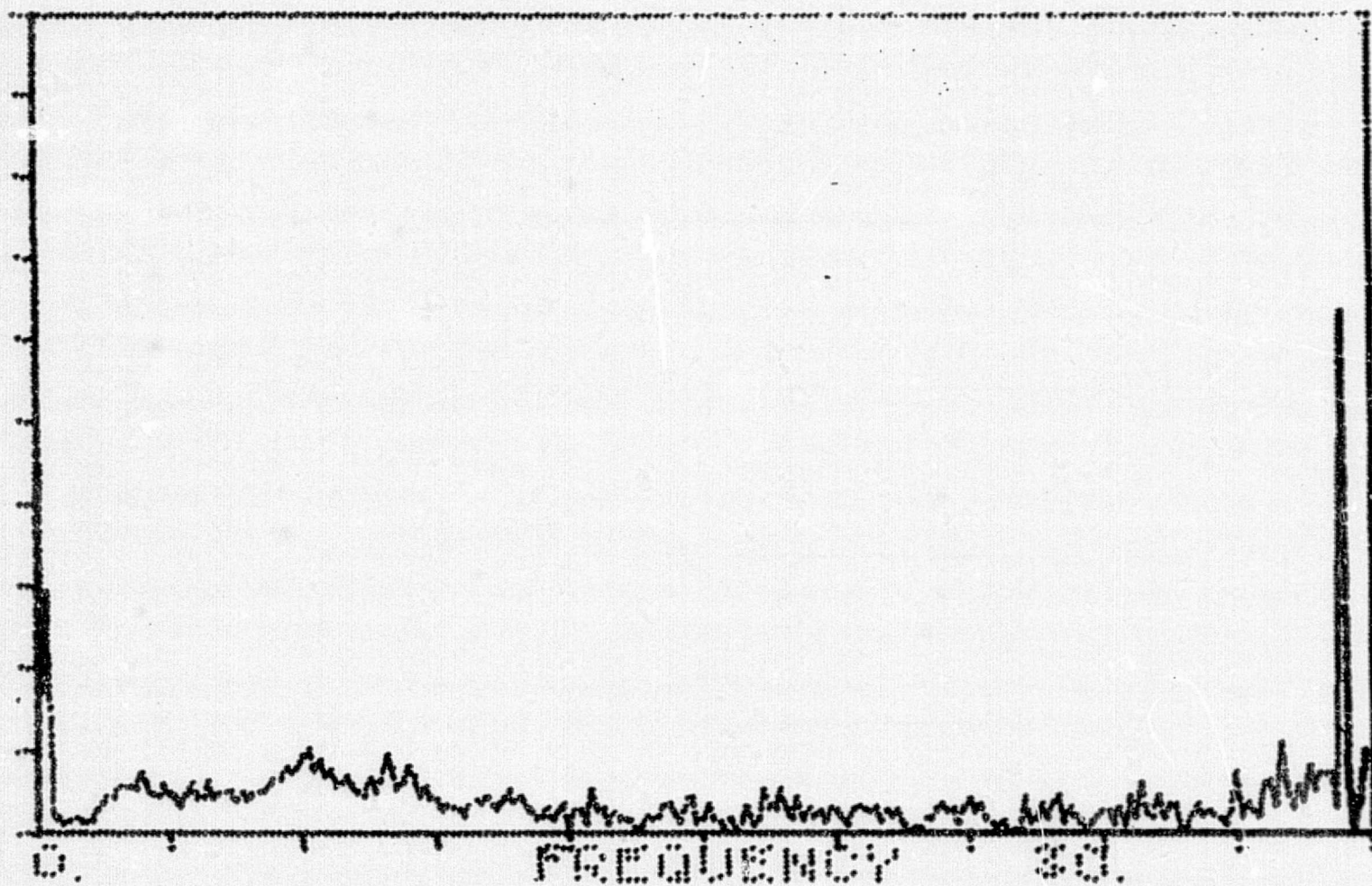
SIZE 256

DL8/FL1

5

90N

0.



COMPLEX

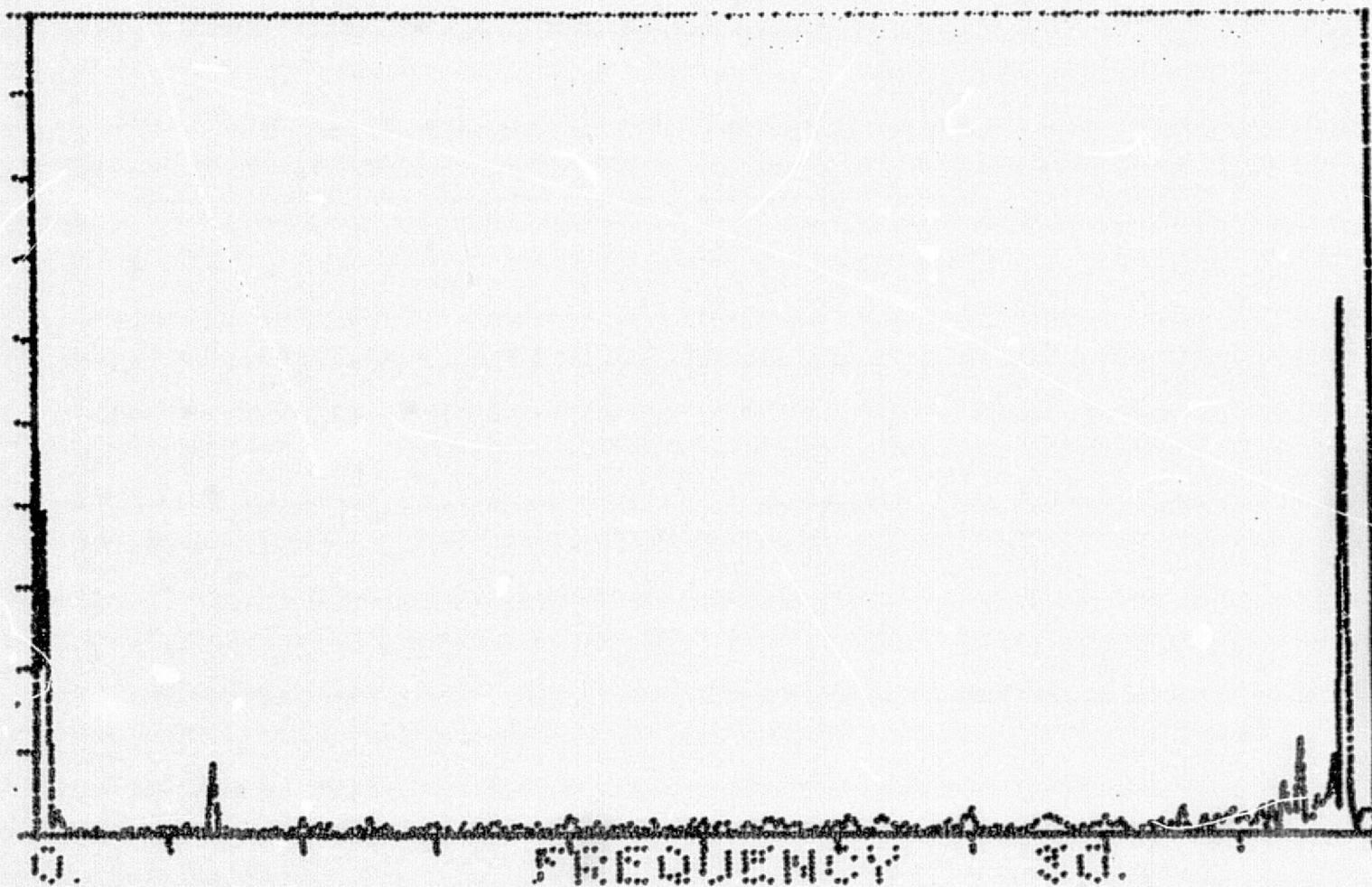
SIZE= 256

DL9/FL1

5

MAGN

0.



COMPLEX

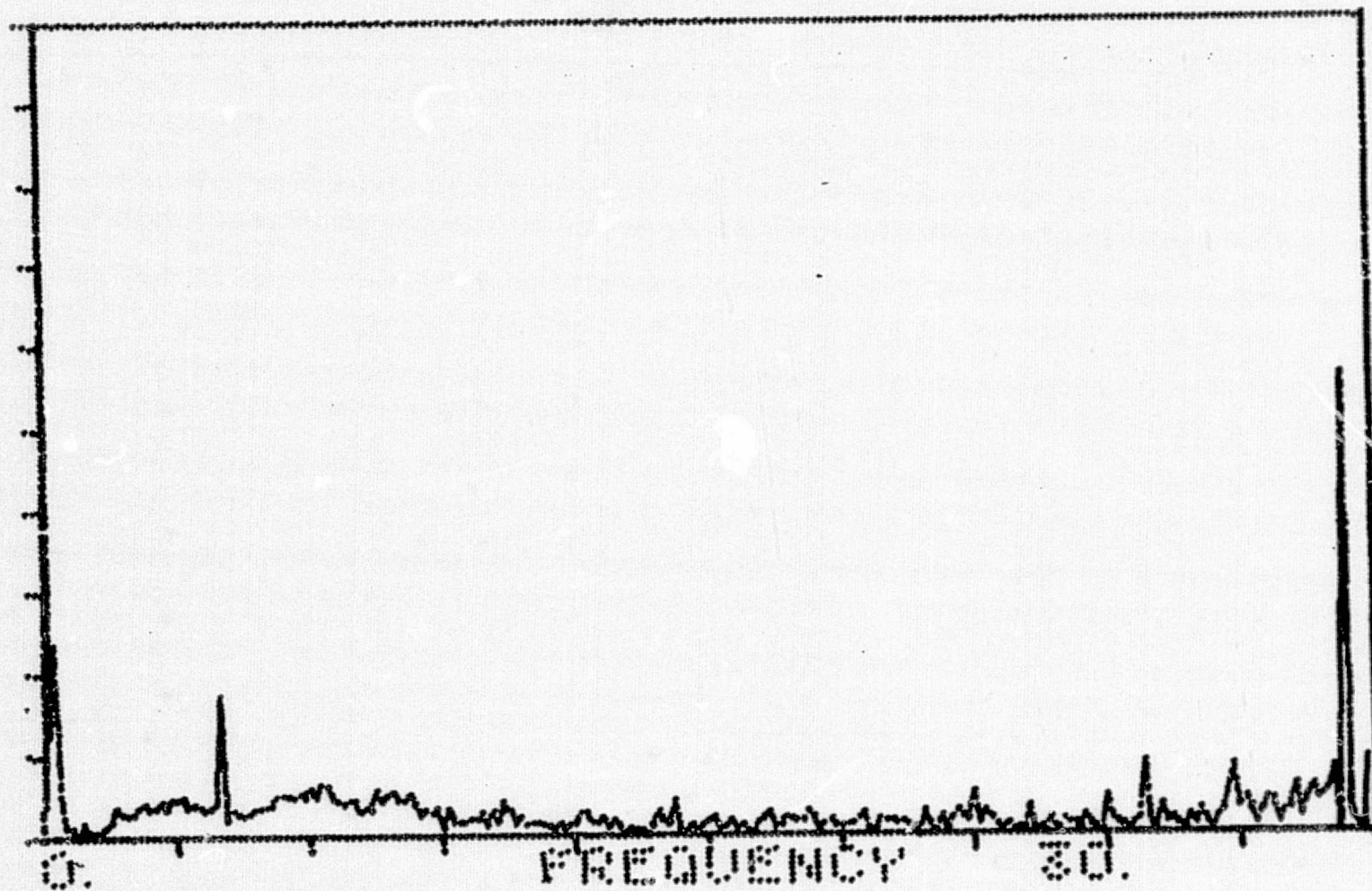
SIZE= 256

DL10/FL1

5

11464

0.



COMPLEX

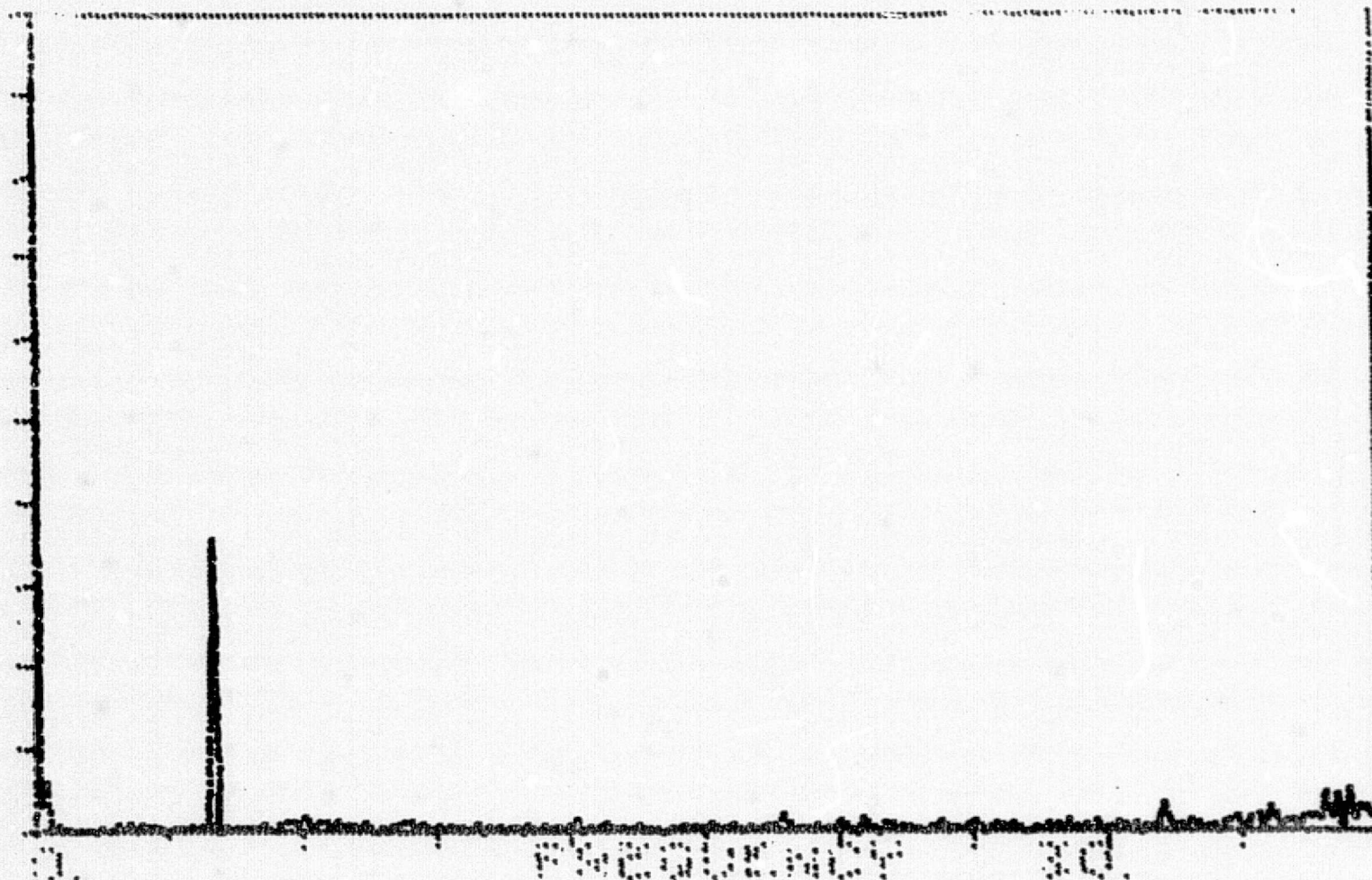
SIZE= 256

DL11/FL1

1.

1960M

0.

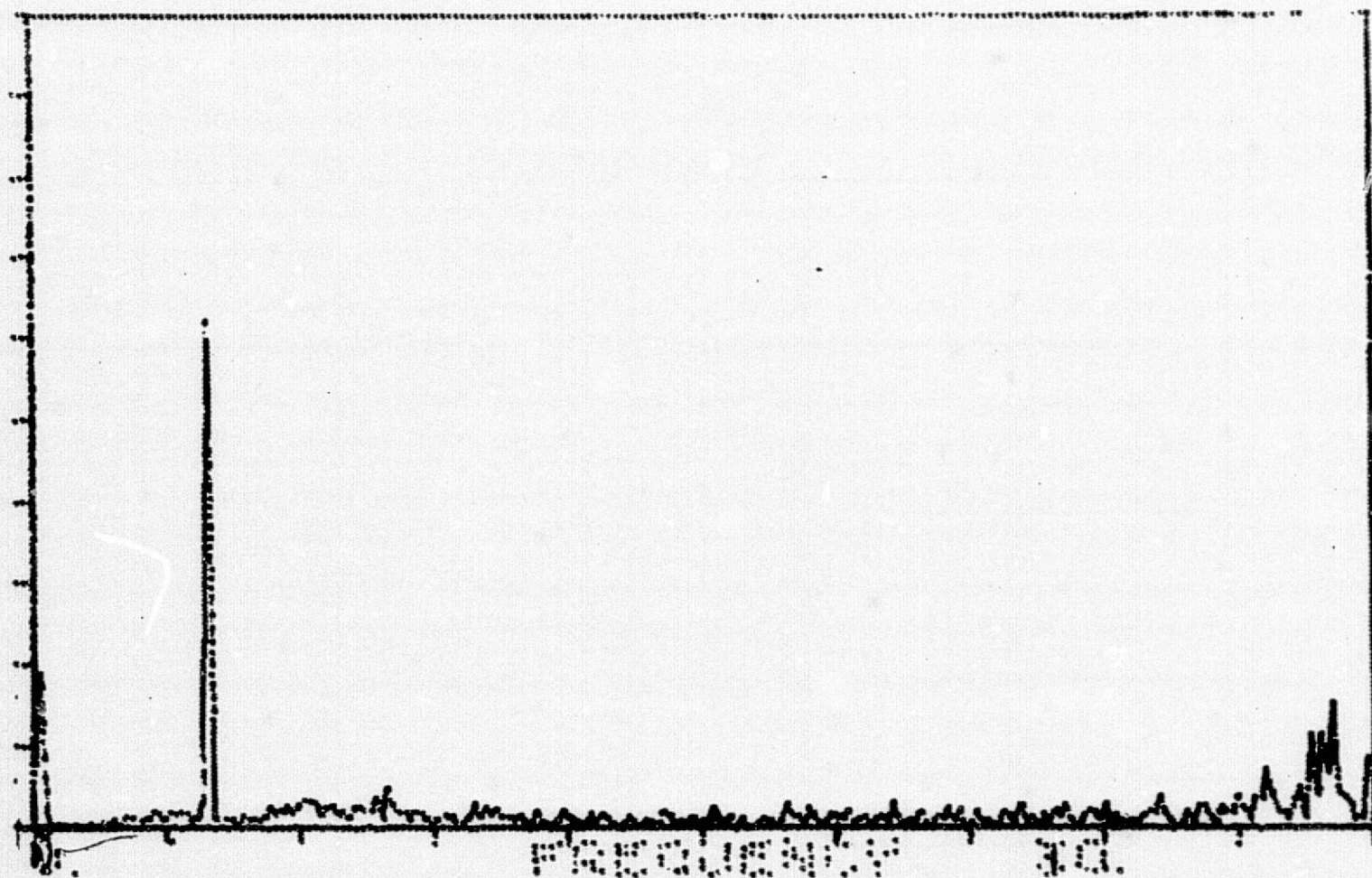


COMPLETE

SI 20- 256

MAGN

0.



AMPLER

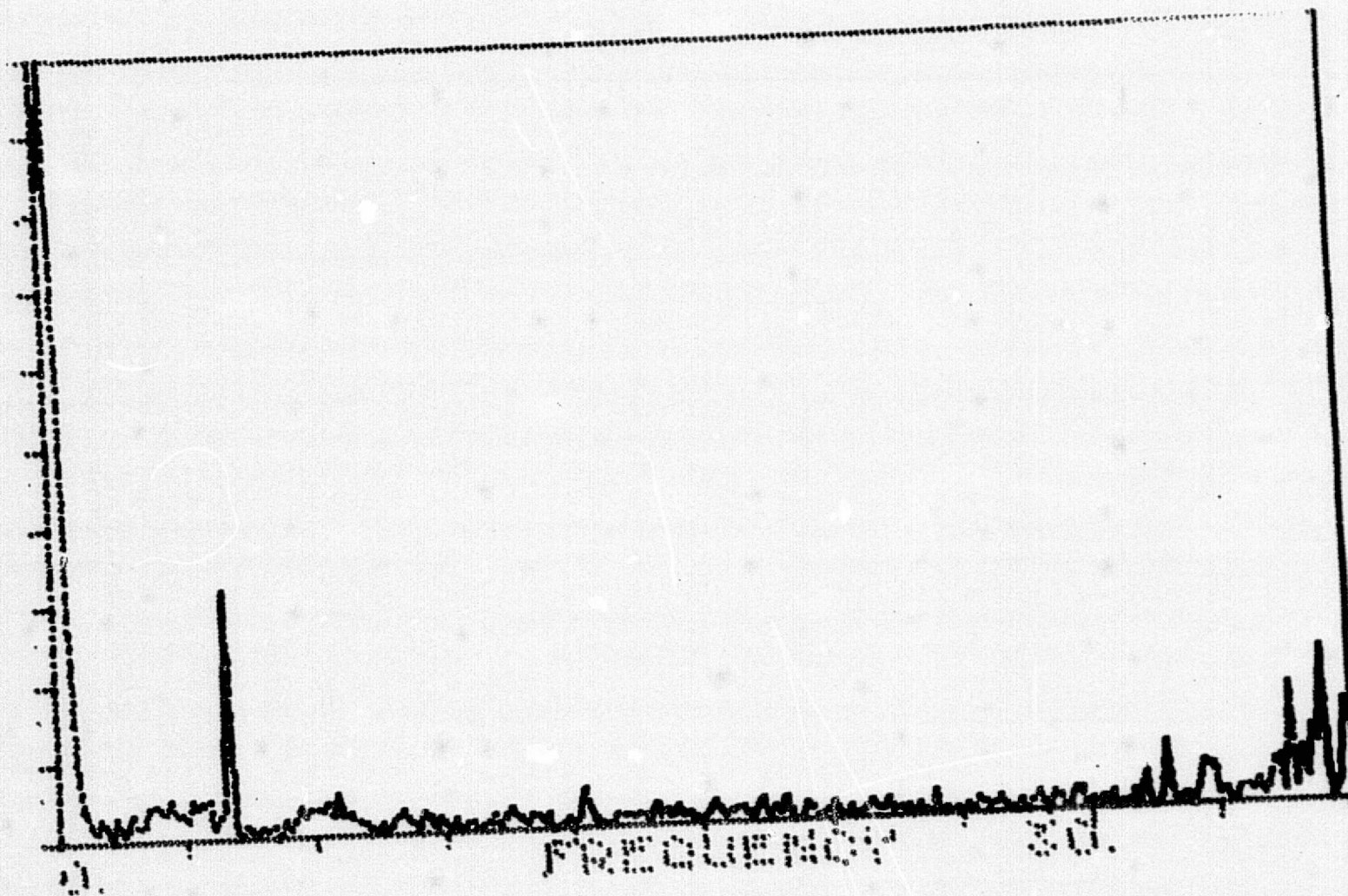
SIZE 250

DL13/FL1

5

MAGN

0.



COMPLEX

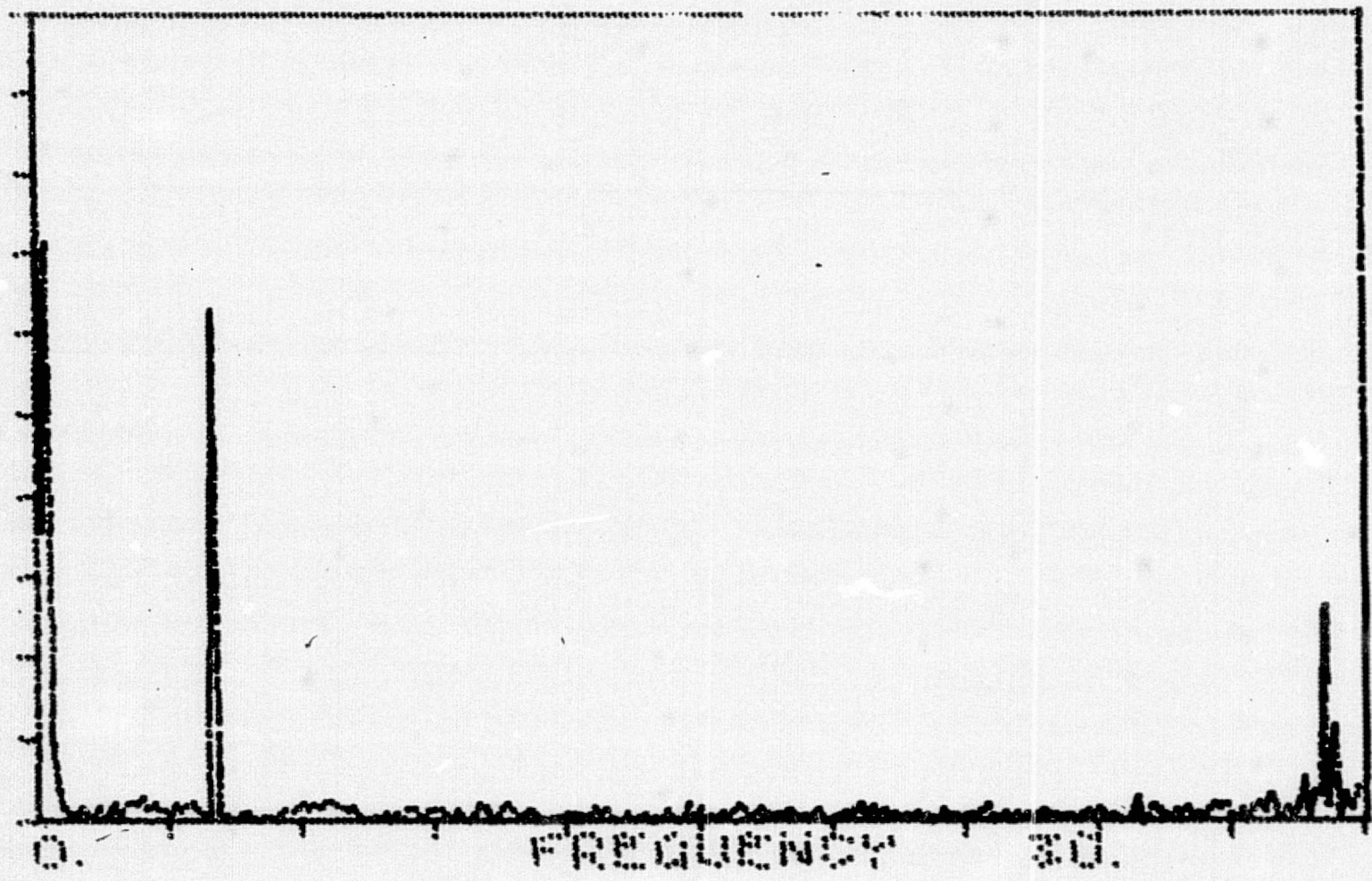
SIZE= 256

DL14/FL1

1.

MAGN

0.



COMPLEX

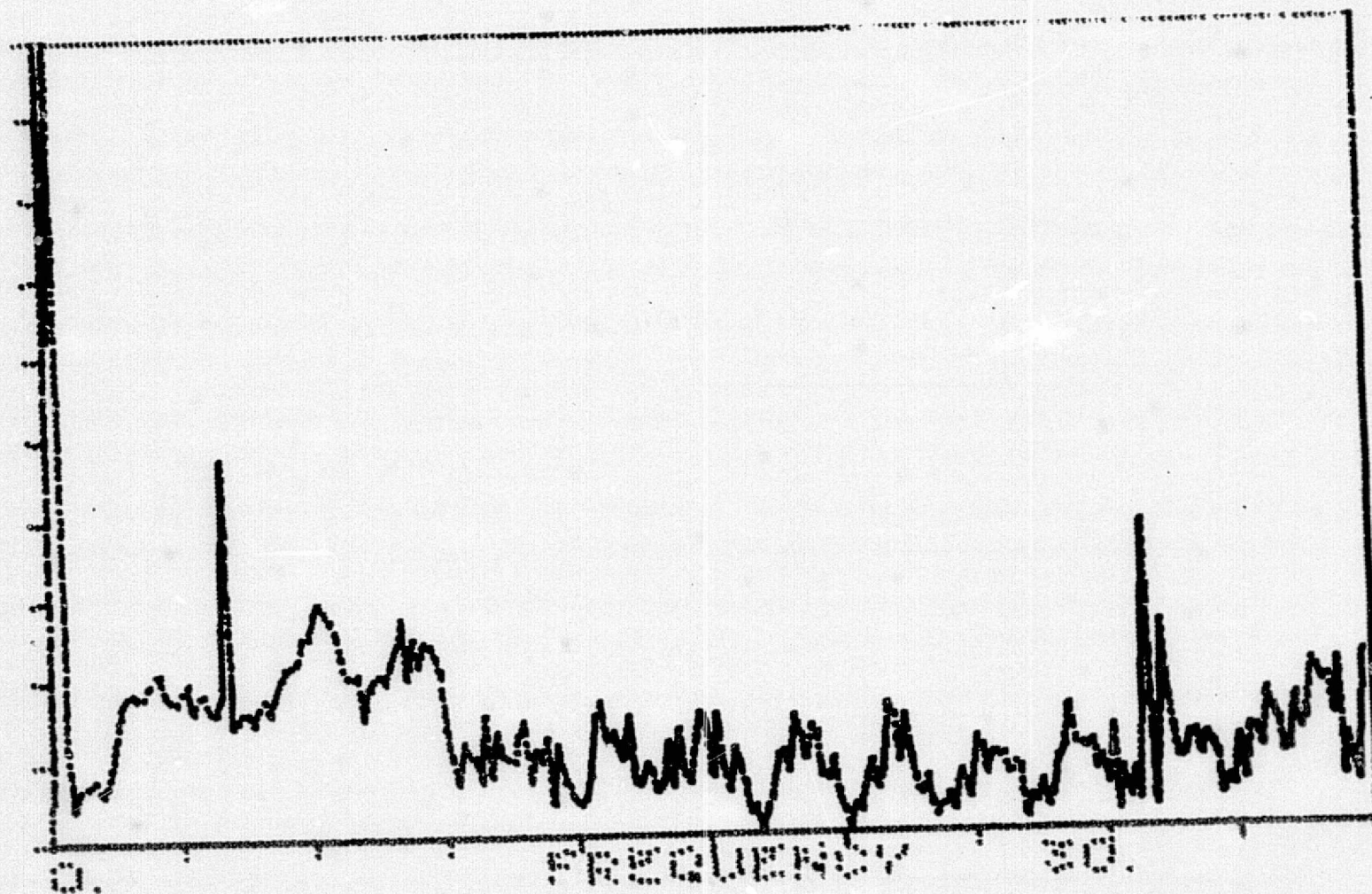
SIZE= 256

DL15/FL1

5

1964

0.



COMPLEX

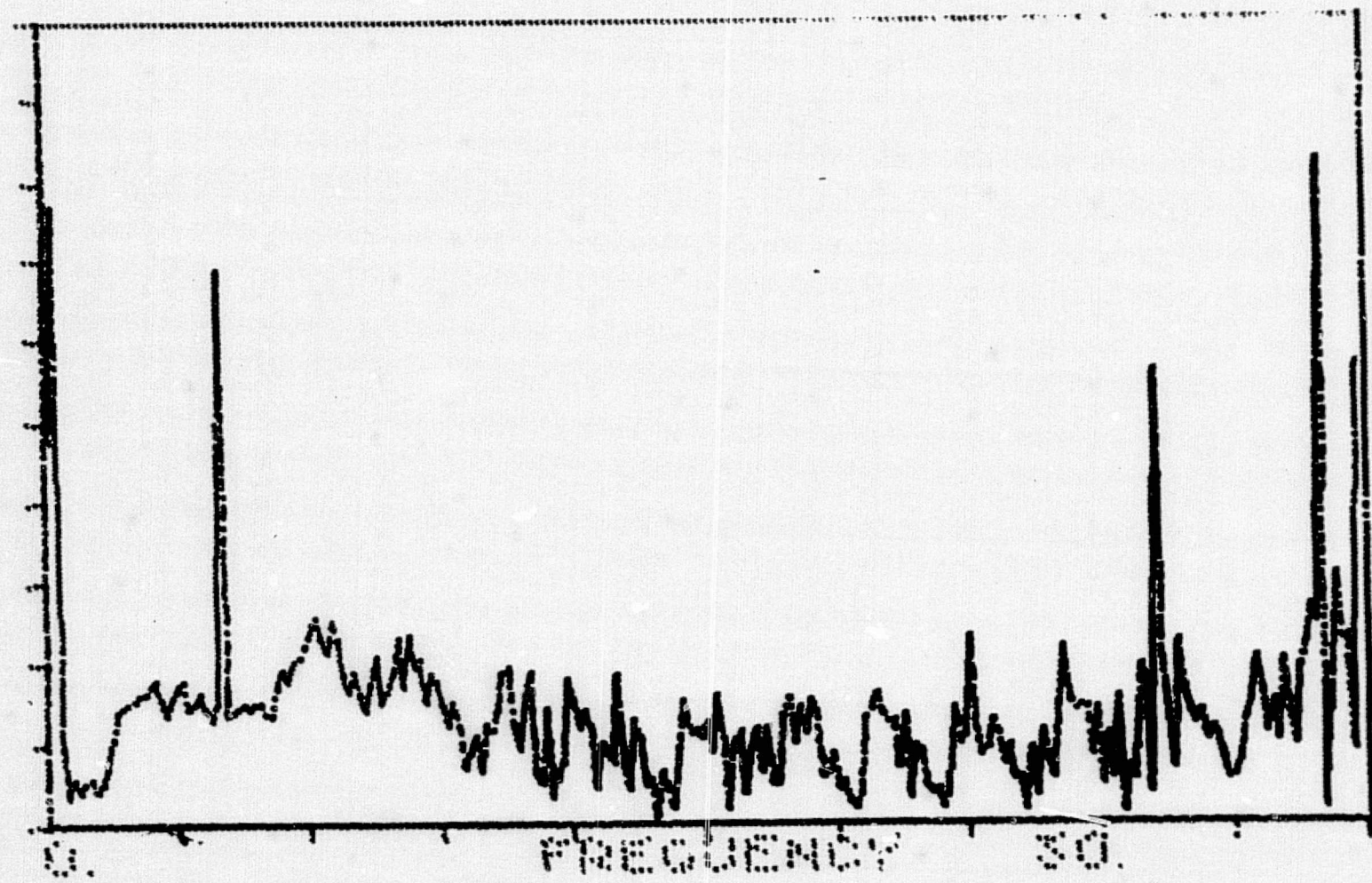
SIZE= 256

DL16/FL1

5

1964

0.



COMPLEX

SIZE: 256

DL17/FL1

VOLUME II

RUN 23 TEST DATA

Y-AXIS, 8020 POUND/ACTUATOR TEST LEVEL,
ACTUATORS 180° OUT OF PHASE

1 HEADING: TRAIN TRACK TRANSFER 8020 LB TEST 3/20/75

SWEEP PARAMETERS:

2 MODE 1=LOG, 0=LIN: 1.
 3 TYPE 1=UNI-DIRECTIONAL, 0=BI-DIRECTIONAL: 1.
 4 START, END FREQ, HZ: .5 50.
 FREQ RANGE -- OCTAVES, DECADES: 6.644 2.
 5 SPECIFICATION 1=RATE, 0=DURATION: 1.
 6 UNITS 1=OCT/MIN, 0=DEC/MIN: 1.
 7 RATE, OCT/MIN: 2.
 SWEEP DURATION -- MIN, SEC: 3. 19.

TEST LENGTH:

8 SPECIFICATION 1=TIME, 0=SWEEP CYCLES: 0.
 9 CYCLES: 1.
 TEST TIME -- HRS, MIN, SEC: 0. 3. 19.

START-UP AND SHUT-DOWN:

10 START-UP TIME, SEC: 120.
 11 SHUT-DOWN TIME, SEC: .5

VIBRATION LIMITS (P-P):

12 DISPLACEMENT, IN: 5000.
 13 VELOCITY, IN/SEC: 9999.
 14 ACCELERATION, G: 450.

REFERENCE CONTROL SPECTRUM:

15 TYPE, VALUE, FREQ, ABORT LIMIT:	2.	40.	0.5	7.
16 TYPE, VALUE, FREQ, ABORT LIMIT:	3.	60.	1.3	6.
17 TYPE, VALUE, FREQ, ABORT LIMIT:	2.	60.	50.	4.
18 TEST LEVEL (DB BELOW REF):	1.			

ACCELERATION SIGNALS:

19 NR OF SIGNALS: 2.
 CHANNEL NRS: 1. 2.
 20 1=PEAK, 0=RMS: 0.
 21 SENSITIVITY, MV/G: 20.
 22 STRATEGY 1=MAX, 0=AVG: 1.

LIMIT SIGNALS:

23 NR OF SIGNALS: 0.

ABORT LINES:

24 NR OF LINES: 0.

ALARM LINES:

25 NR OF LINES: 0.
 26 1=DUAL-CHANNEL A/D, 0=ACE: 1.
 27 COMPRESSION SPEED 2=HIGH, 1=NORMAL, 0=LOW: 1.

POST-TEST DOCUMENTATION

TRAIN TRACK TRANS 8000LB OUT PHASE RUN 23 3/20/75

COMPLETION STATUS: ABORTED DURING SWEEP 1 AT 34.93 HZ.
MAXIMUM DRIVE LIMIT.

TEST DURATION -- HRS, MIN, SEC: 0 3 3

MAX ABS CONTROL ERROR: 2.74 DB AT 23.64 HZ.

AVG ABS CONTROL ERROR: .6173 DB.

CONTROL
CHANNEL FREQ RANGE (HZ)

SWEEP 1

2	.5	--	2.841
1	2.841	--	10.63
2	10.63	--	11.06
1	11.06	--	11.98
2	11.98	--	12.54
1	12.54	--	12.64
2	12.64	--	13.28
1	13.28	--	13.37
2	13.37	--	13.8
1	13.8	--	13.94
2	13.94	--	14.32
1	14.32	--	14.38
2	14.38	--	14.8
1	14.8	--	14.9
2	14.9	--	15.19
1	15.19	--	15.32
2	15.32	--	15.68
1	15.68	--	15.74
2	15.74	--	16.26
1	16.26	--	16.29
2	16.29	--	16.8
1	16.8	--	16.84
2	16.84	--	17.32
1	17.32	--	17.36
2	17.36	--	18.06
1	18.06	--	18.1
2	18.1	--	18.87
1	18.87	--	18.94
2	18.94	--	19.89
1	19.89	--	19.93

CONTROL
CHANNEL FREQ RANGE (HZ)

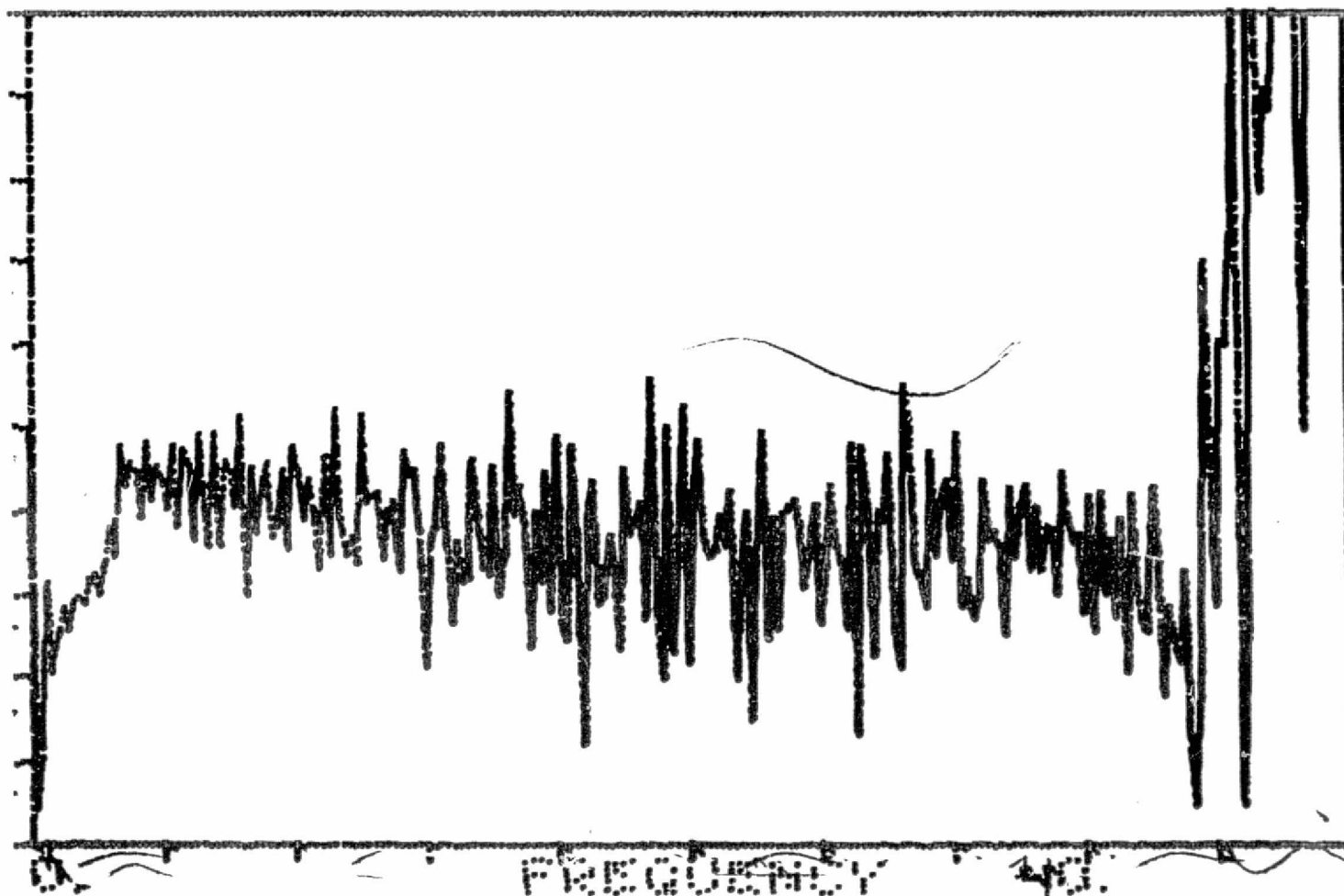
SWEEP 1 (CONTINUED)

2	19.93	--	20.43
1	20.43	--	20.47
2	20.47	--	20.68
1	20.68	--	20.7
2	20.7	--	20.87
1	20.87	--	20.91
2	20.91	--	21.34
1	21.34	--	21.36
2	21.36	--	21.51
1	21.51	--	21.55
2	21.55	--	21.57
1	21.57	--	21.61
2	21.61	--	22.14
1	22.14	--	22.18
2	22.18	--	22.79
1	22.79	--	22.96
2	22.96	--	23.4
1	23.4	--	23.49
2	23.49	--	25.36
1	25.36	--	25.41
2	25.41	--	26.47
1	26.47	--	26.98
2	26.98	--	27.36
1	27.36	--	27.69
2	27.69	--	28.23
1	28.23	--	28.6
2	28.6	--	29.54
1	29.54	--	29.84
2	29.84	--	34.93

2

MAON

0.



COMPLEX

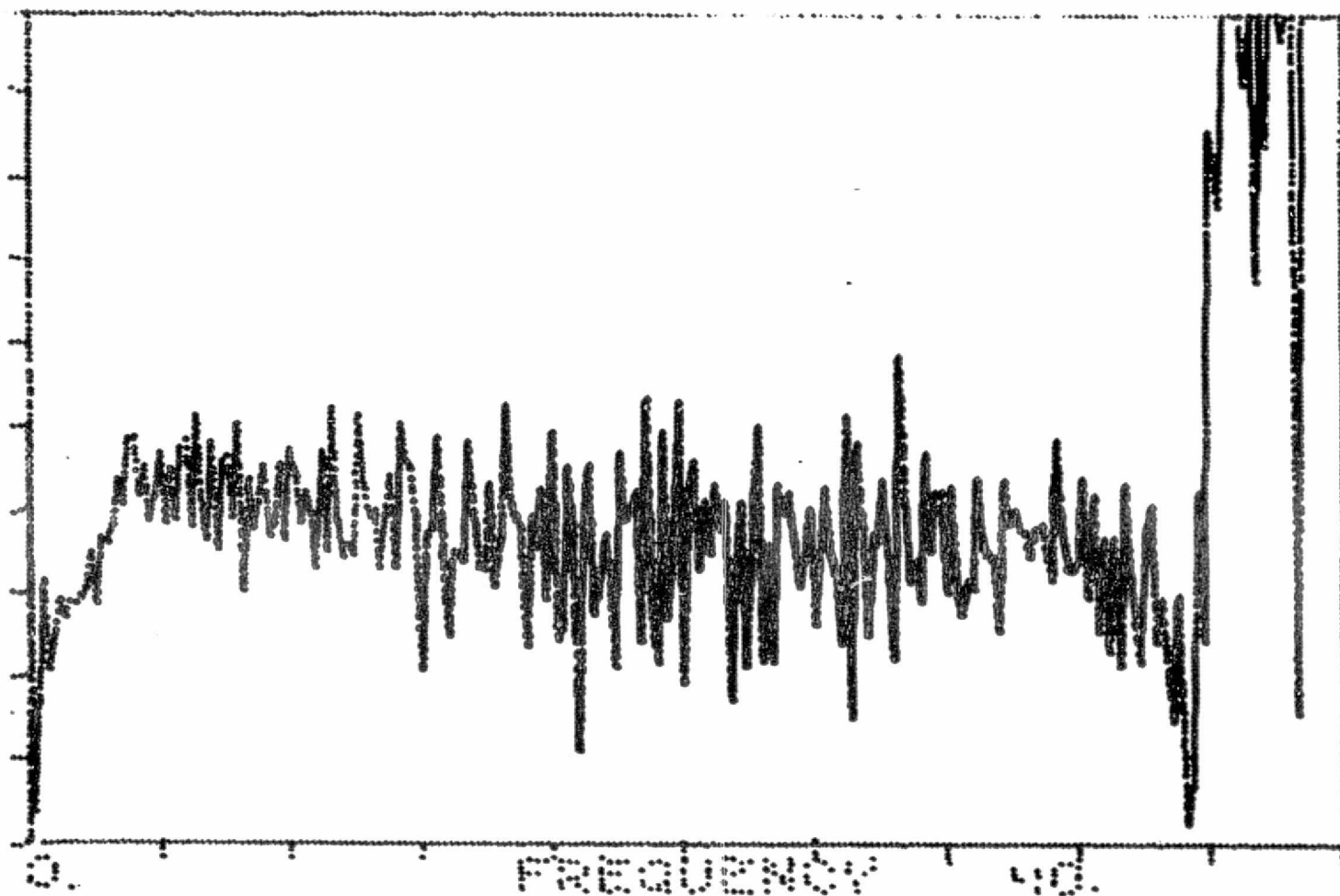
SIZE= 256

FL1/DRIVE

a.

naon

a.



COMPLEX

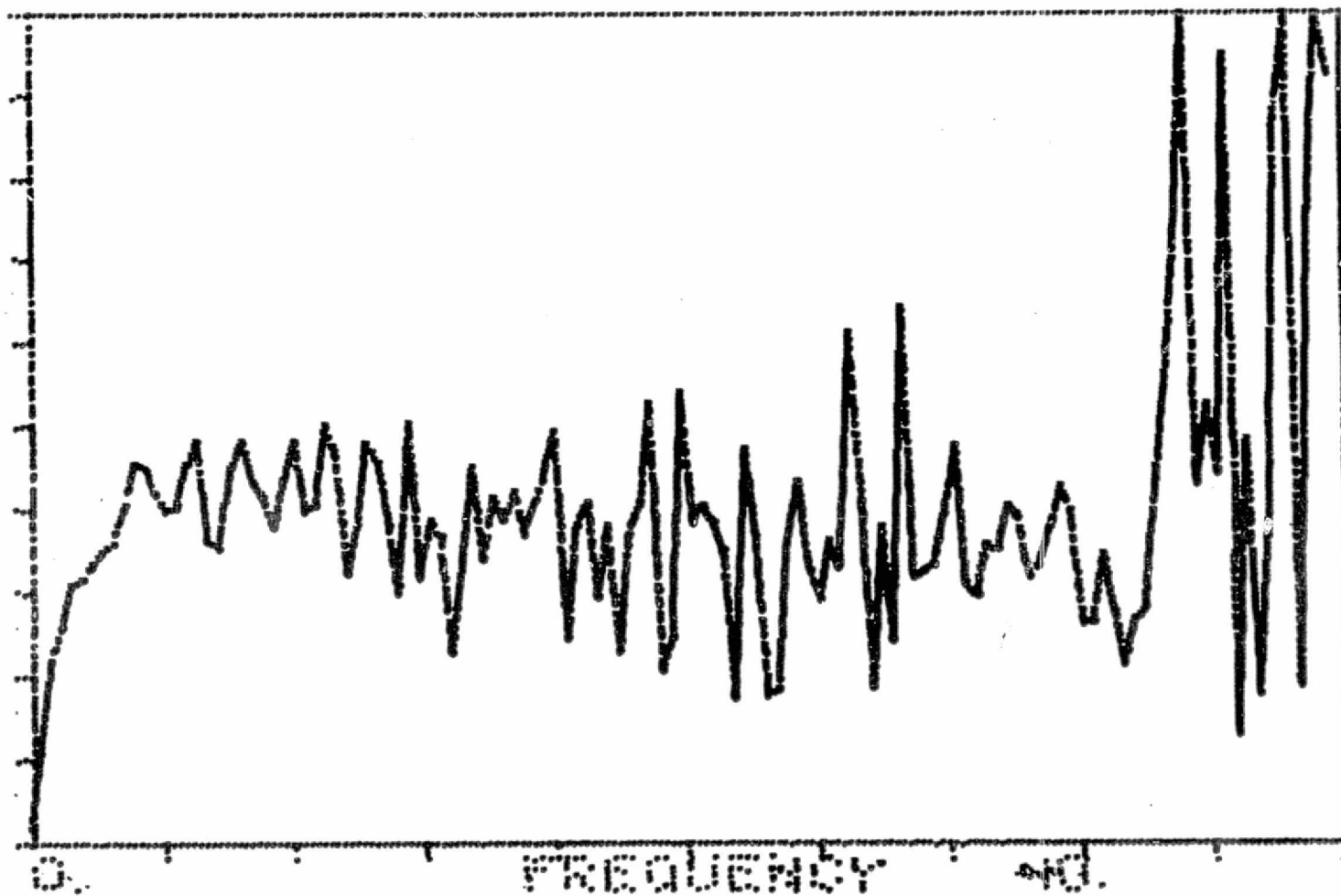
SIZE= 255

FL1/DRIVE

3.

MAON

0.



COMPLEX

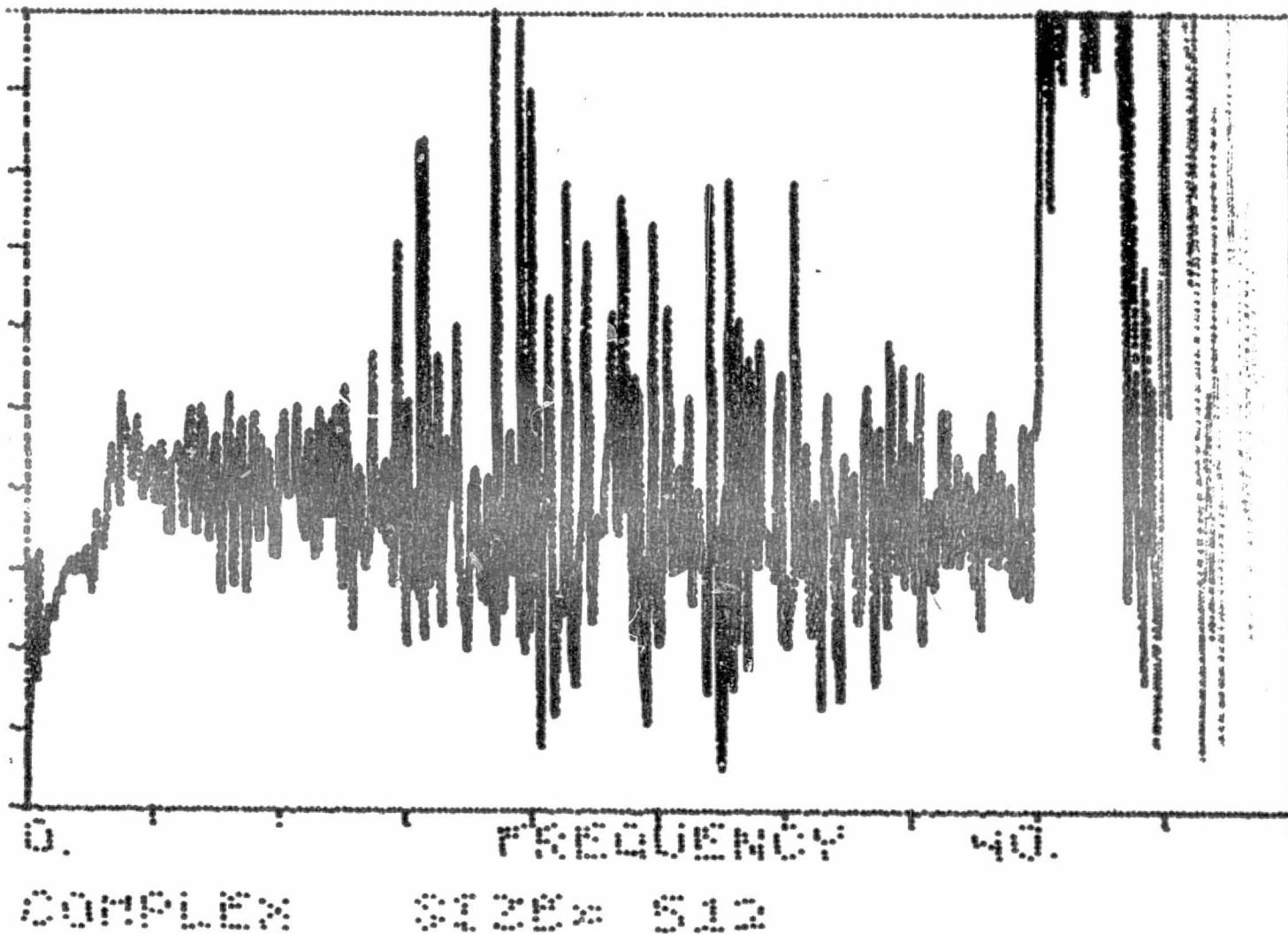
SIZE= 128

FL1/DRIVE

a.

MAGN

a.

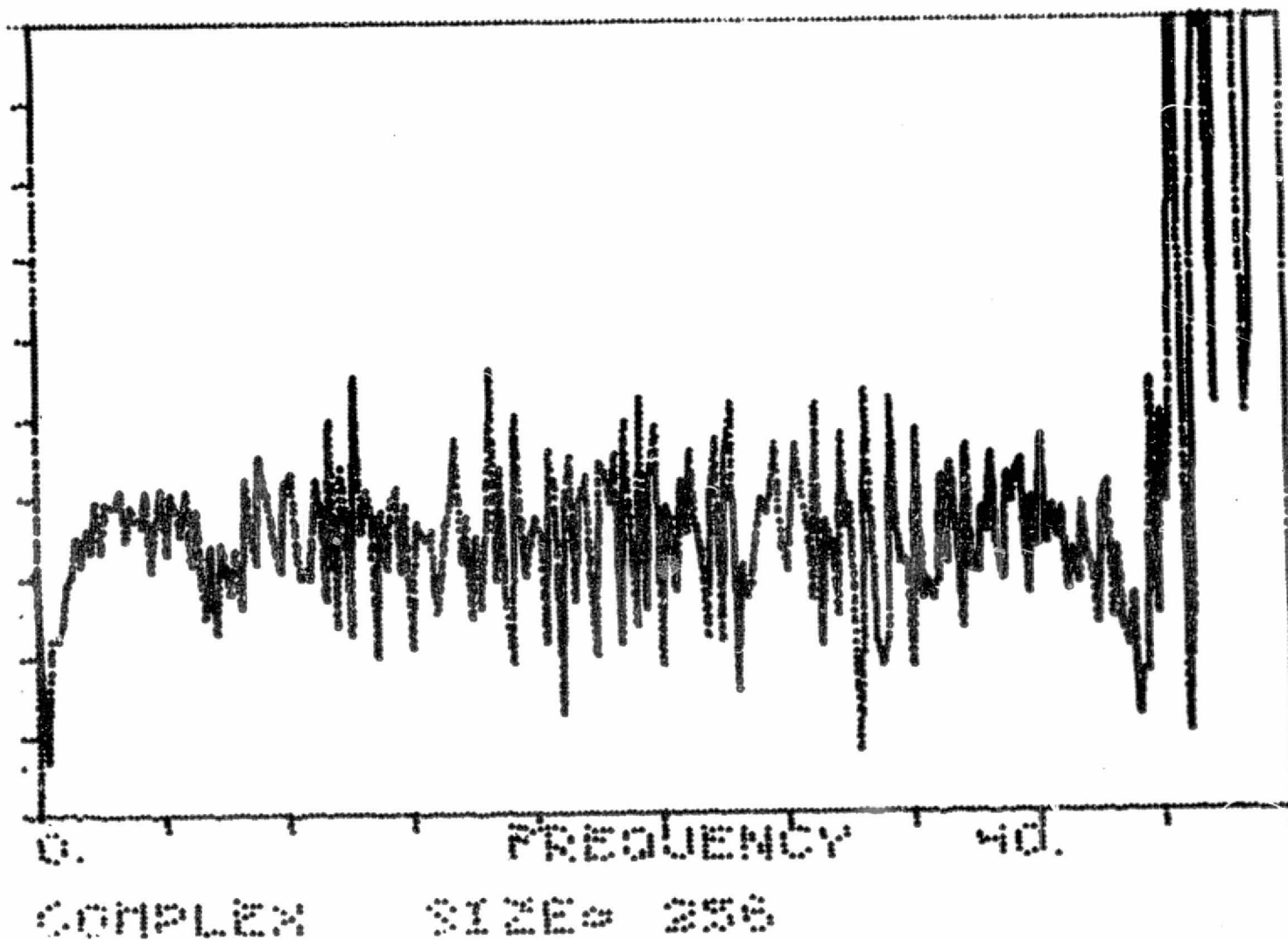


FL1/DRIVE

a.

MAGN

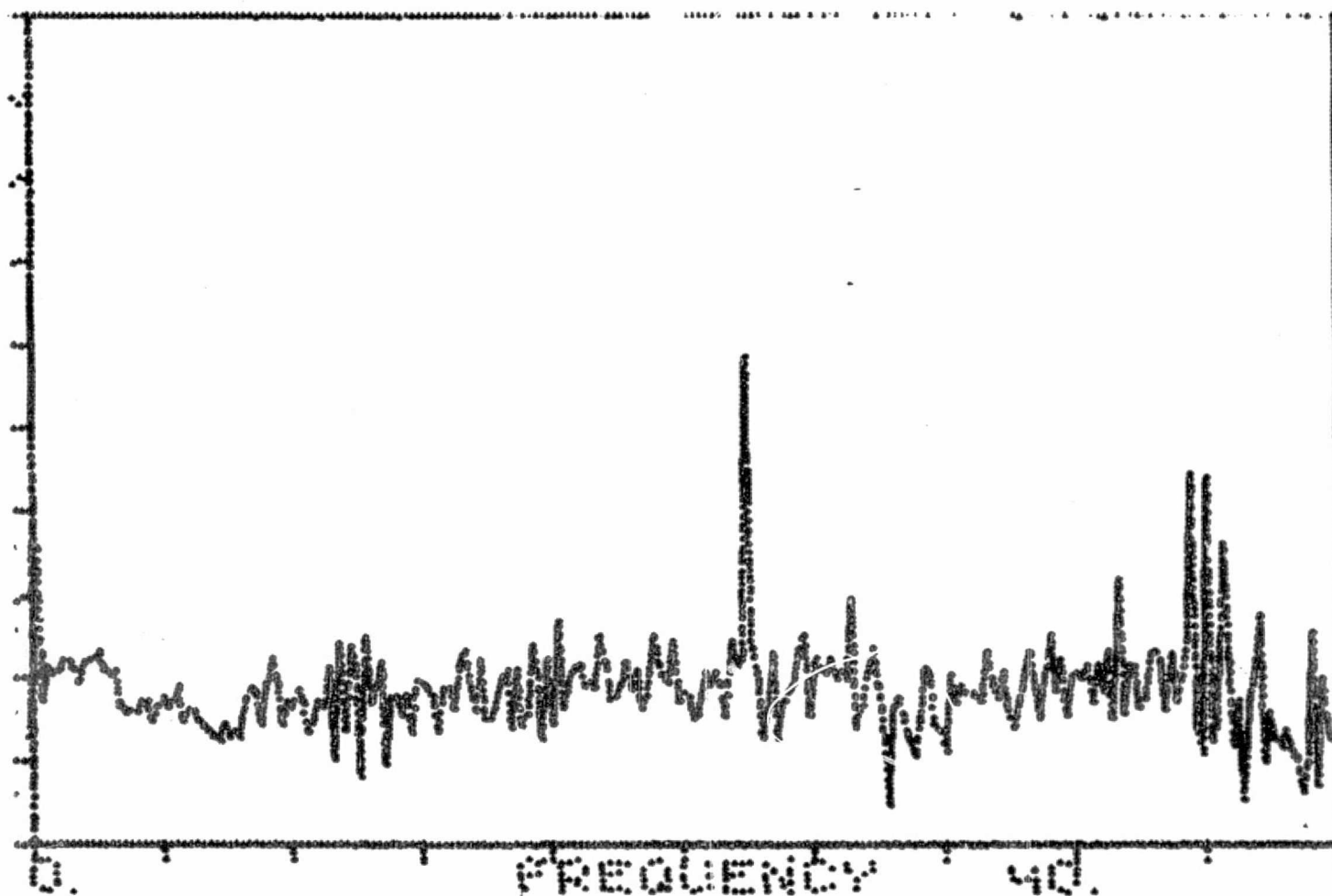
a.



8.

1. 76N

0.



COMPLEX

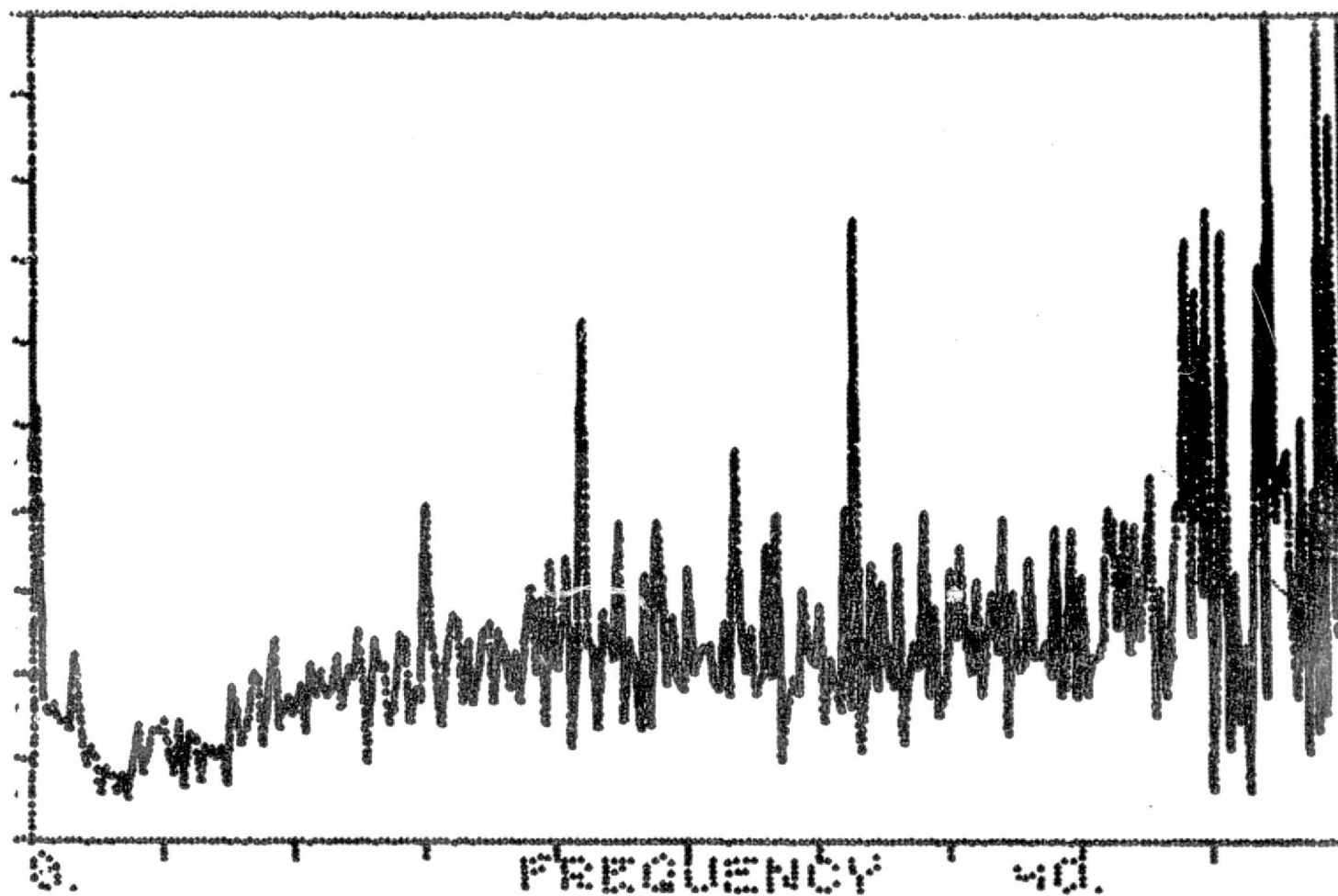
SIZE= 256

FL2/FL1

a.

HA64

a.



COMPLEX

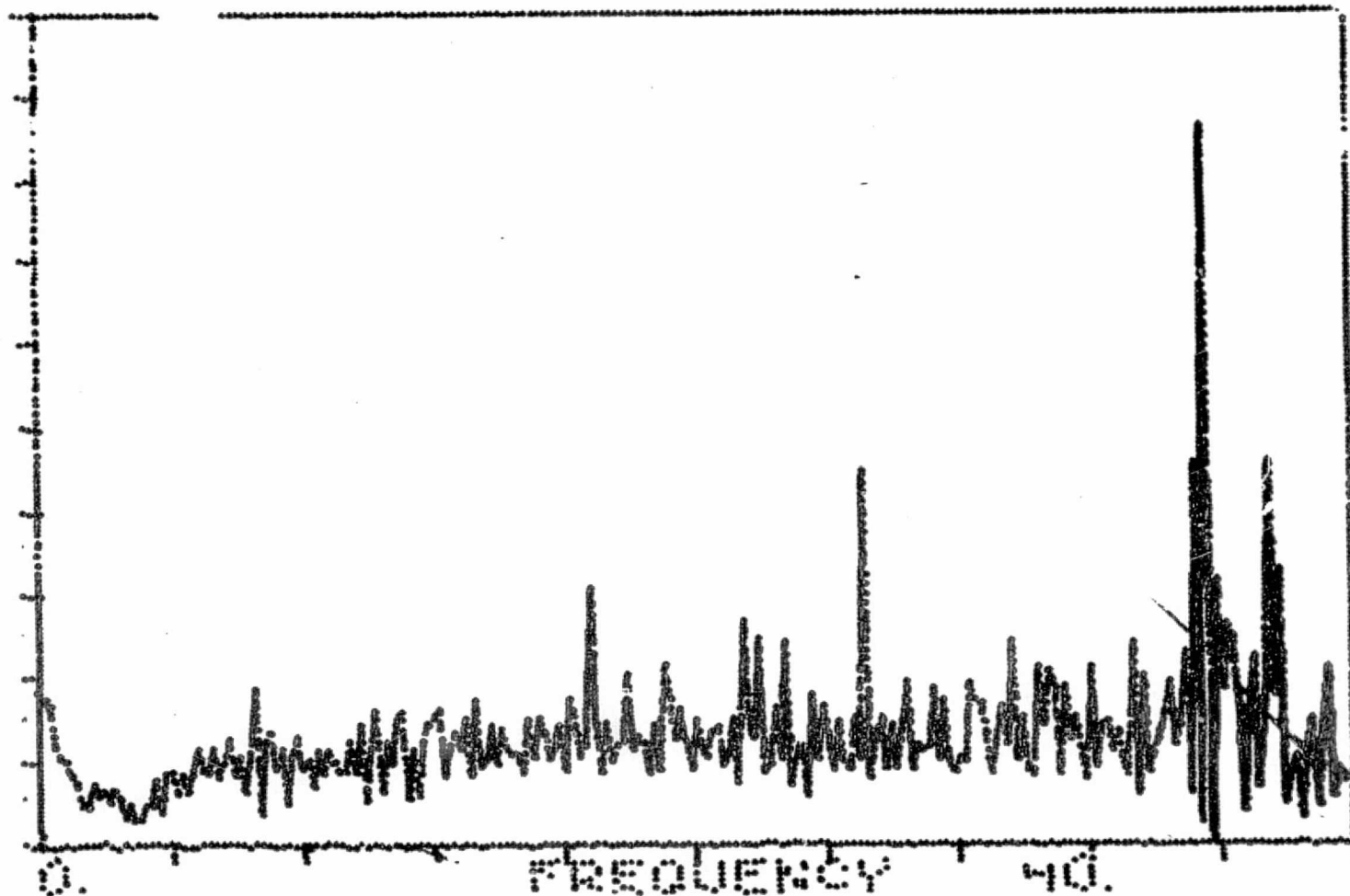
SIZE= 256

FV2/FL1

5.

HP6K

0.



COMPLEX

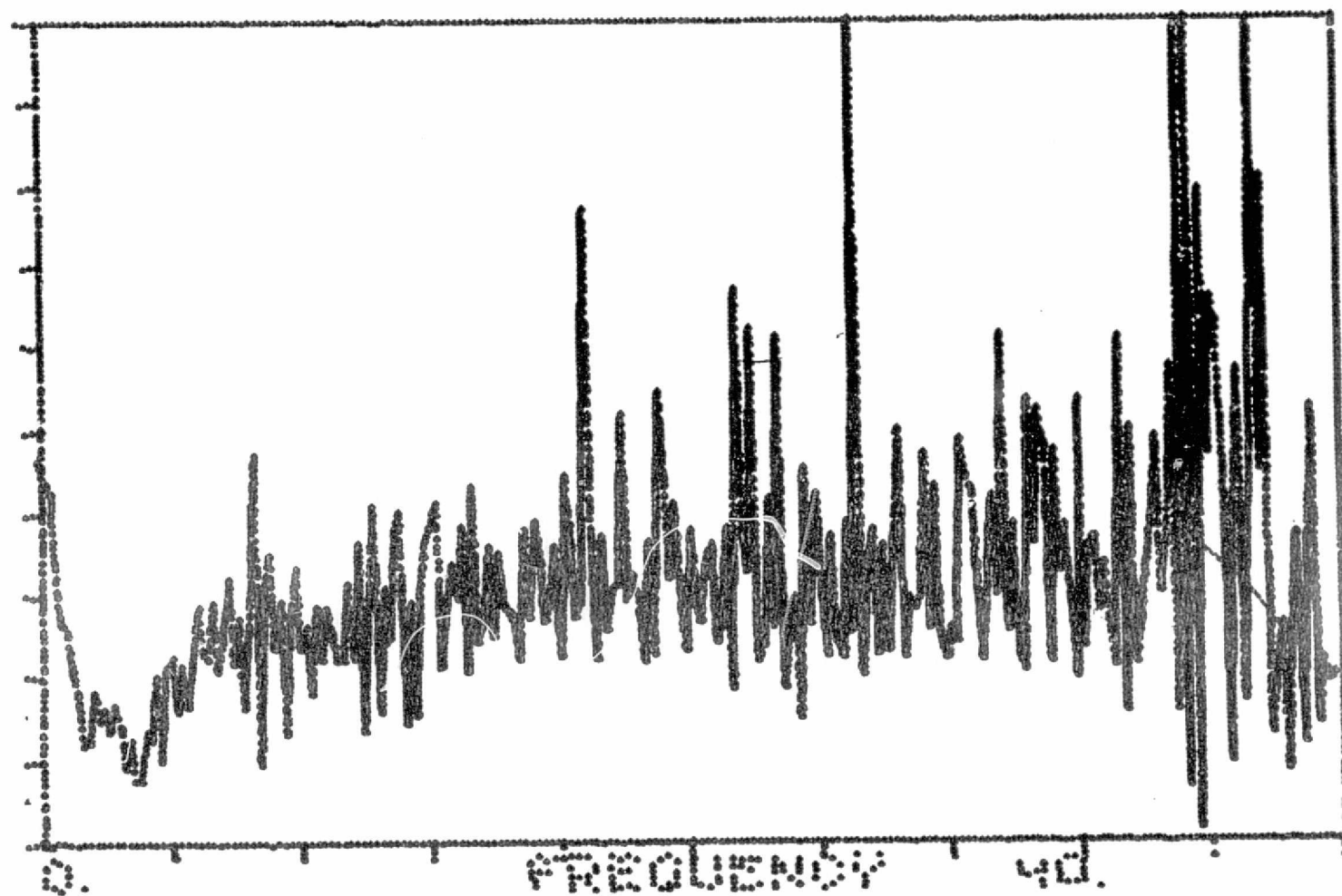
SIZE* 256

FV3/FL1

2.

MAGN

0.



COMPLEX

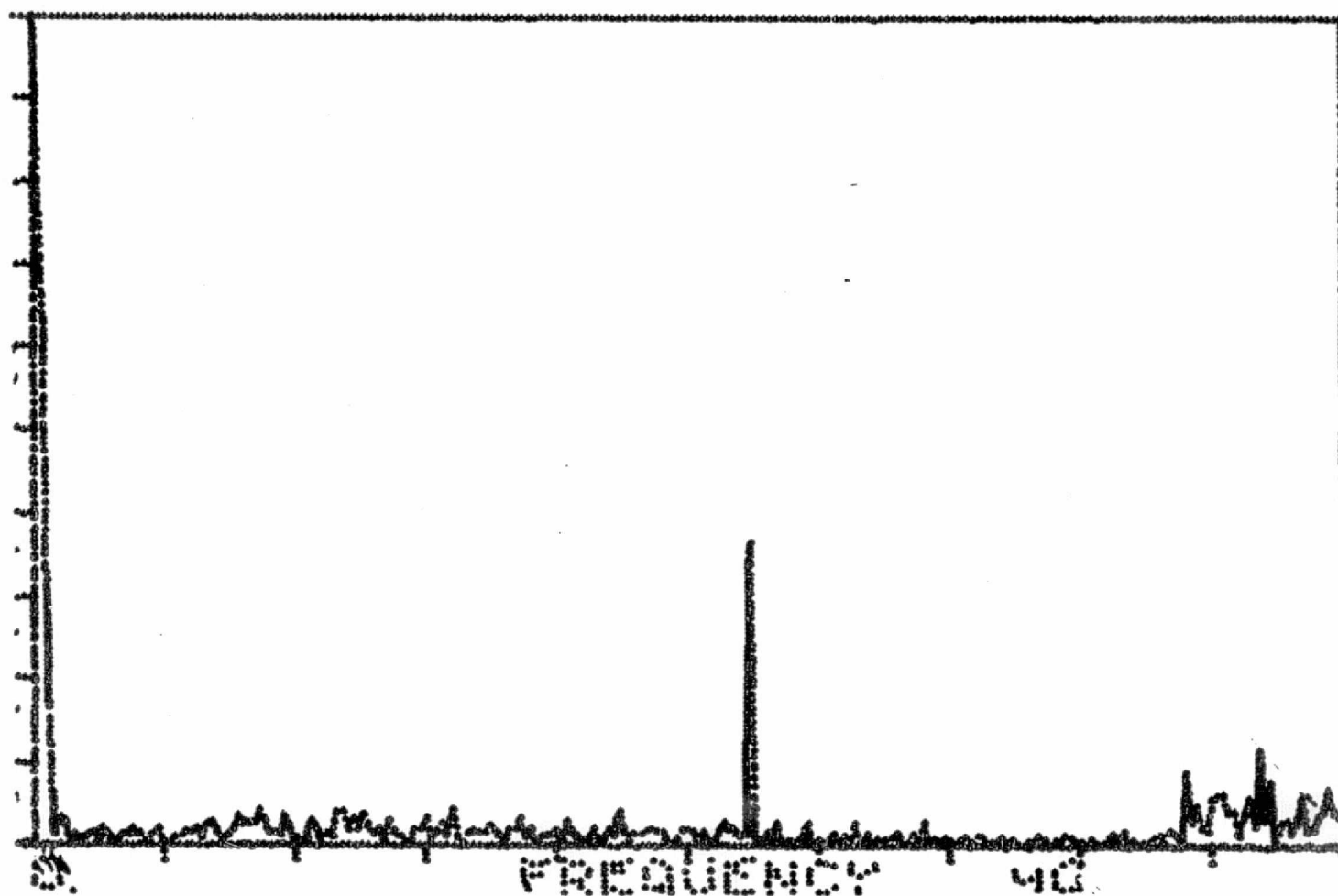
SIZE= 256

FV3/FL1

3.

1804

0.



COMPLEX

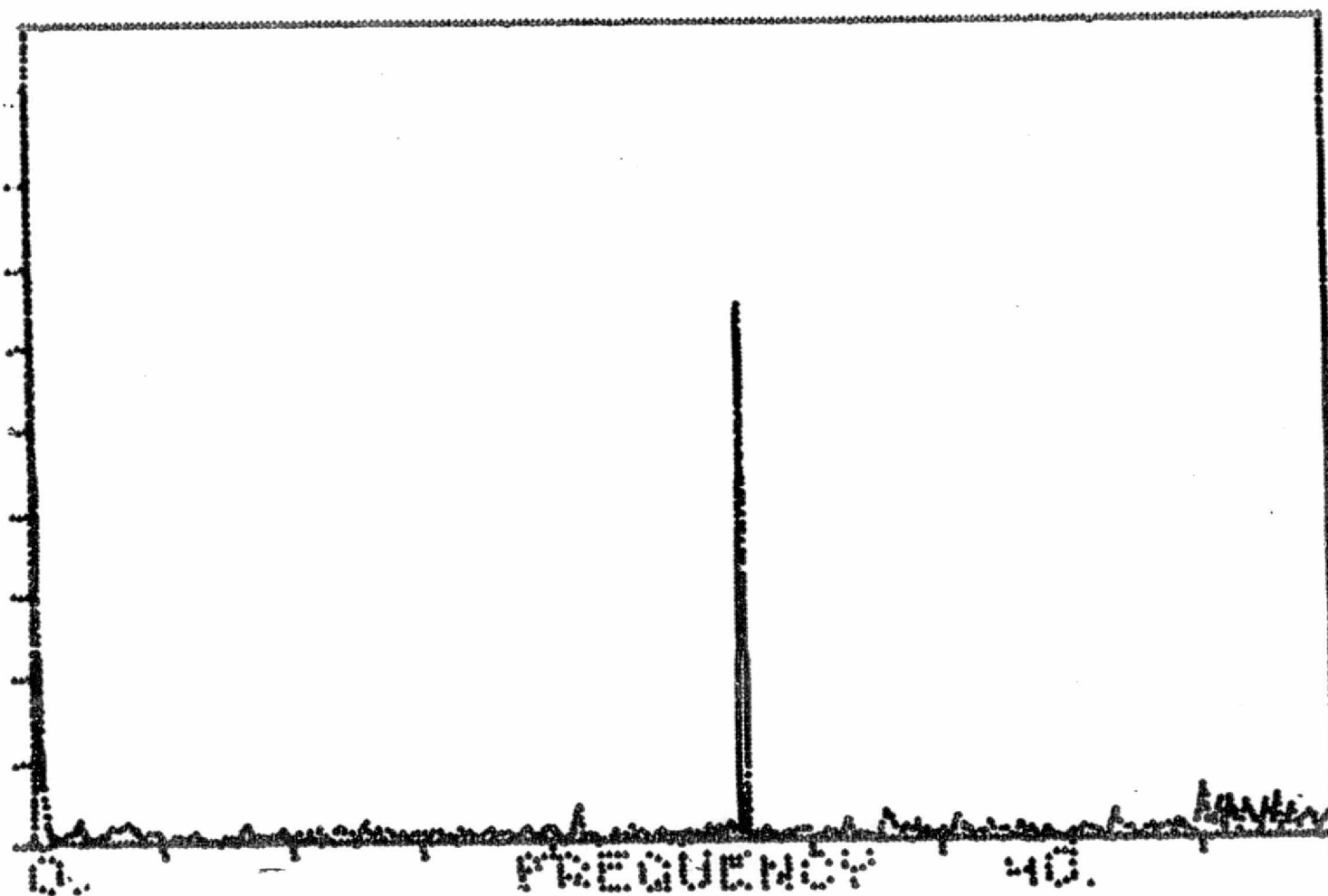
SIZE= 256

DV1/FL1

1.

1200

0.



COMPLEX

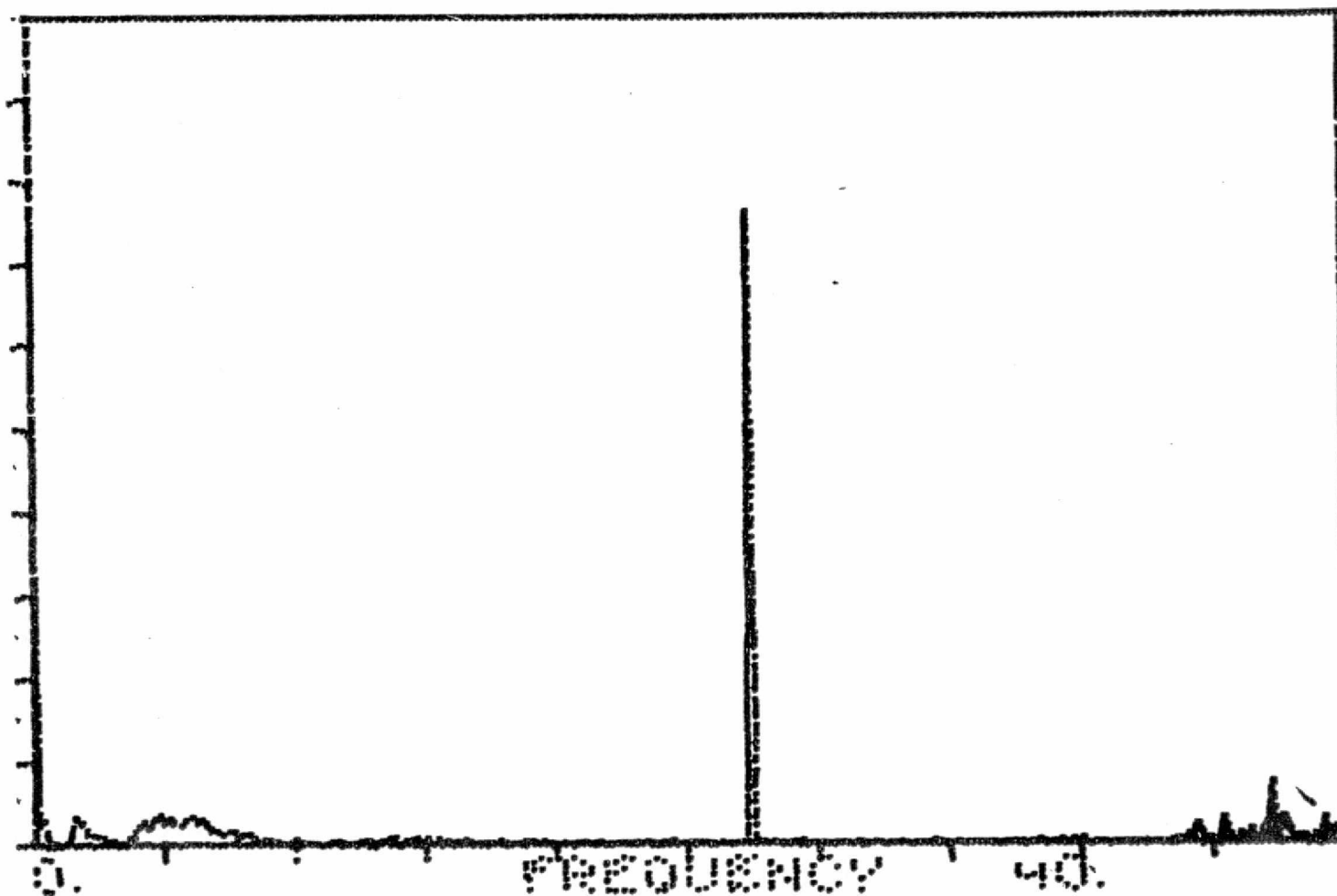
SIZE= 256

DV2/FL1

2.

MAON

0.



COMPLEX

SIZE= 258

1.

MAON

0.

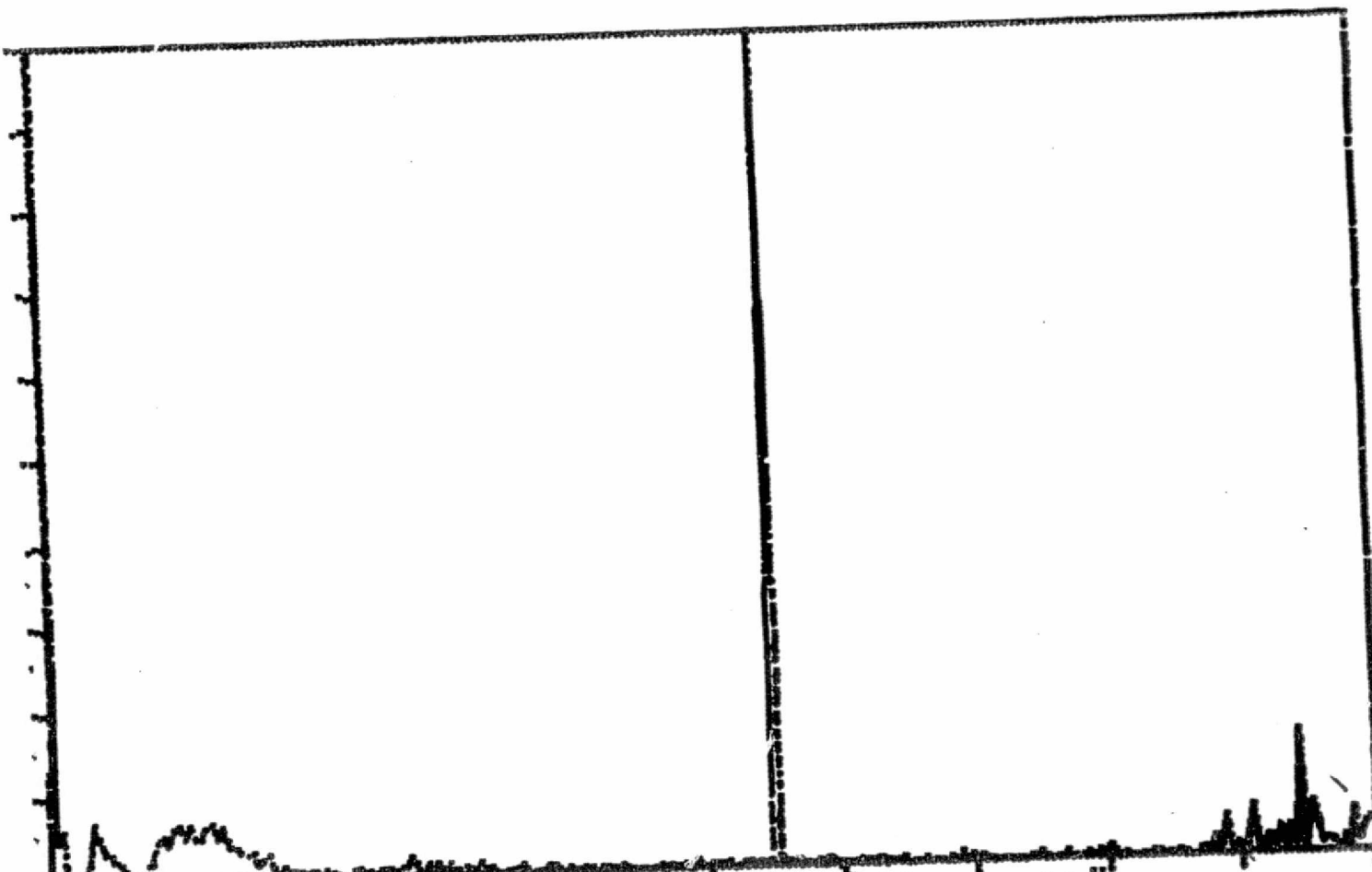
0.

COMPLEX

SIZE= 256

FREQUENCY

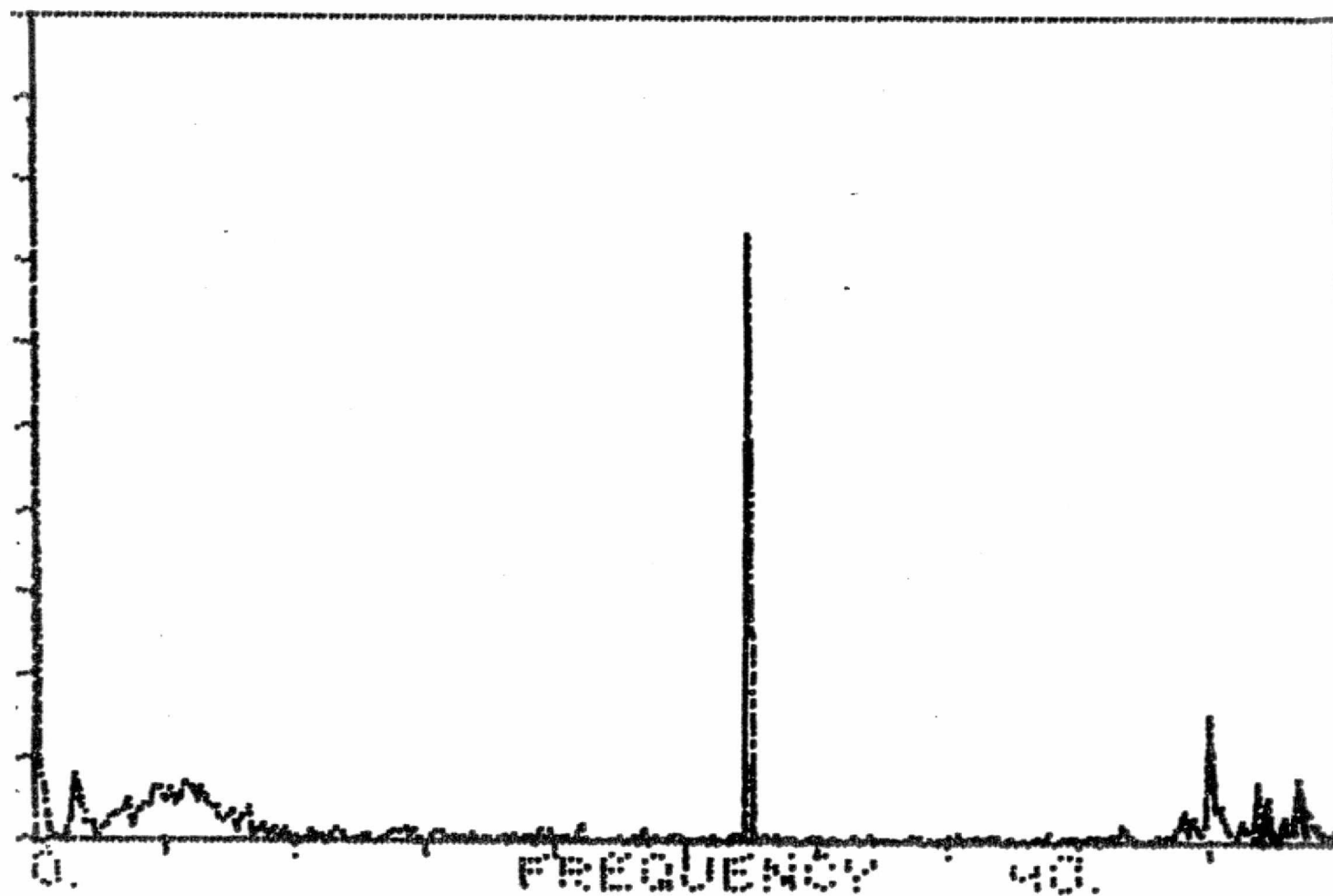
40.



1.

MAON

0.



COMPLEX

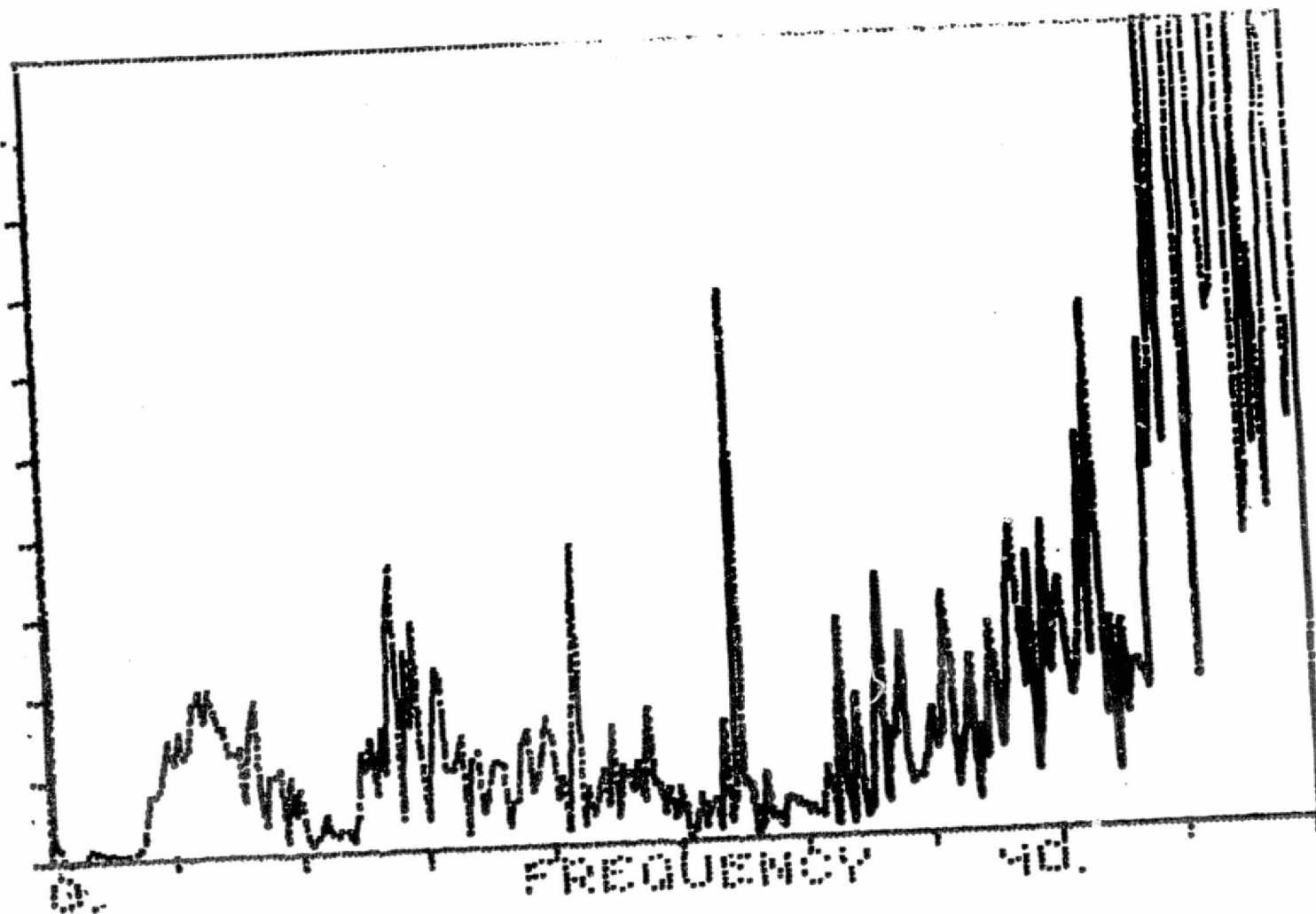
SIZE= 256

DV4/FL1

3.

mag

0.



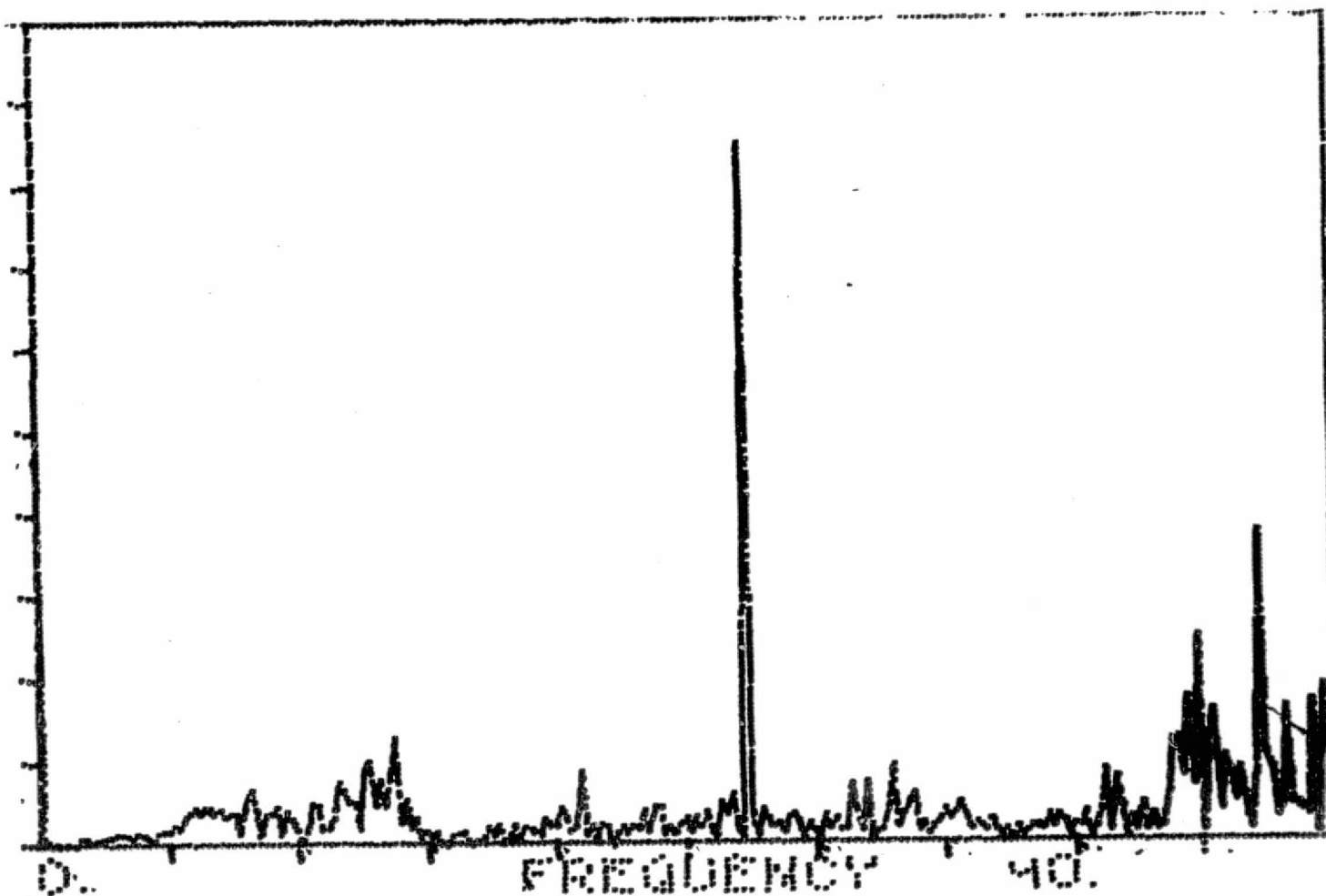
COMPLEX SIZE= 256

AV1/FL1

2.

PACK

a.



COMPLEX

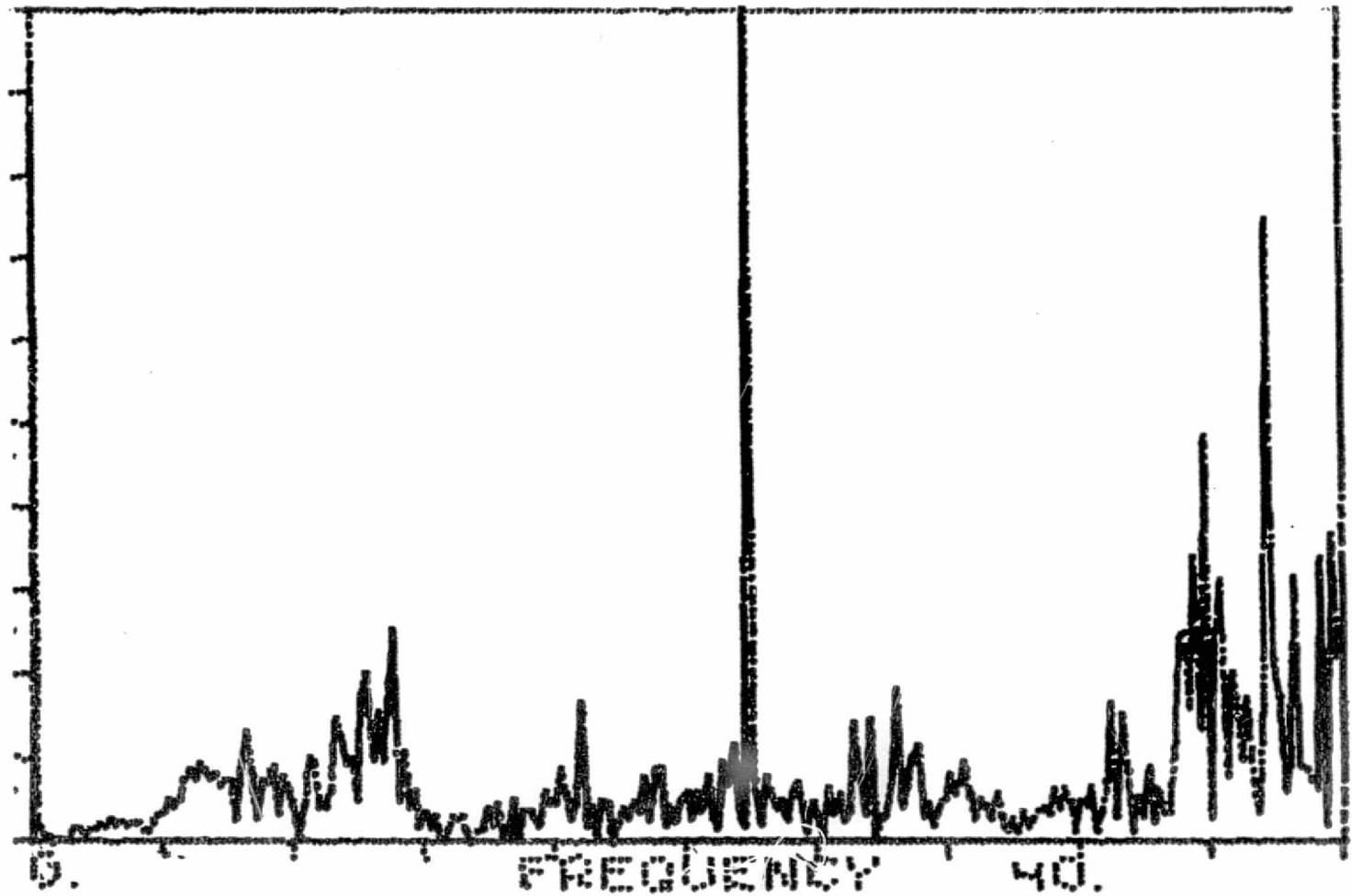
SIZE= 256

AV2/FL1

1.

NR64

0.



COMPLEX

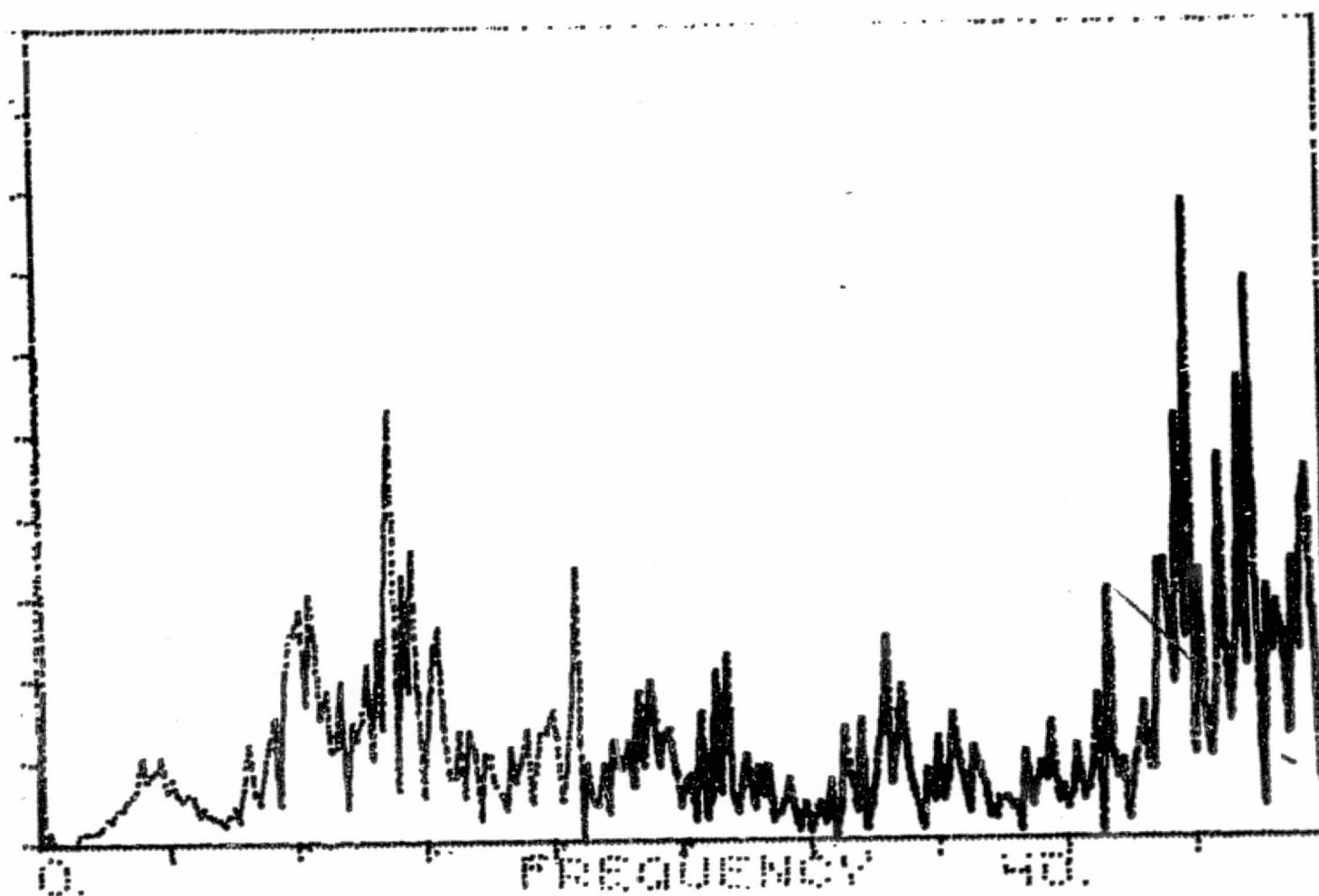
SIZE= 256

AV2/FL1

1.

MAGN

0.



COMPLEX

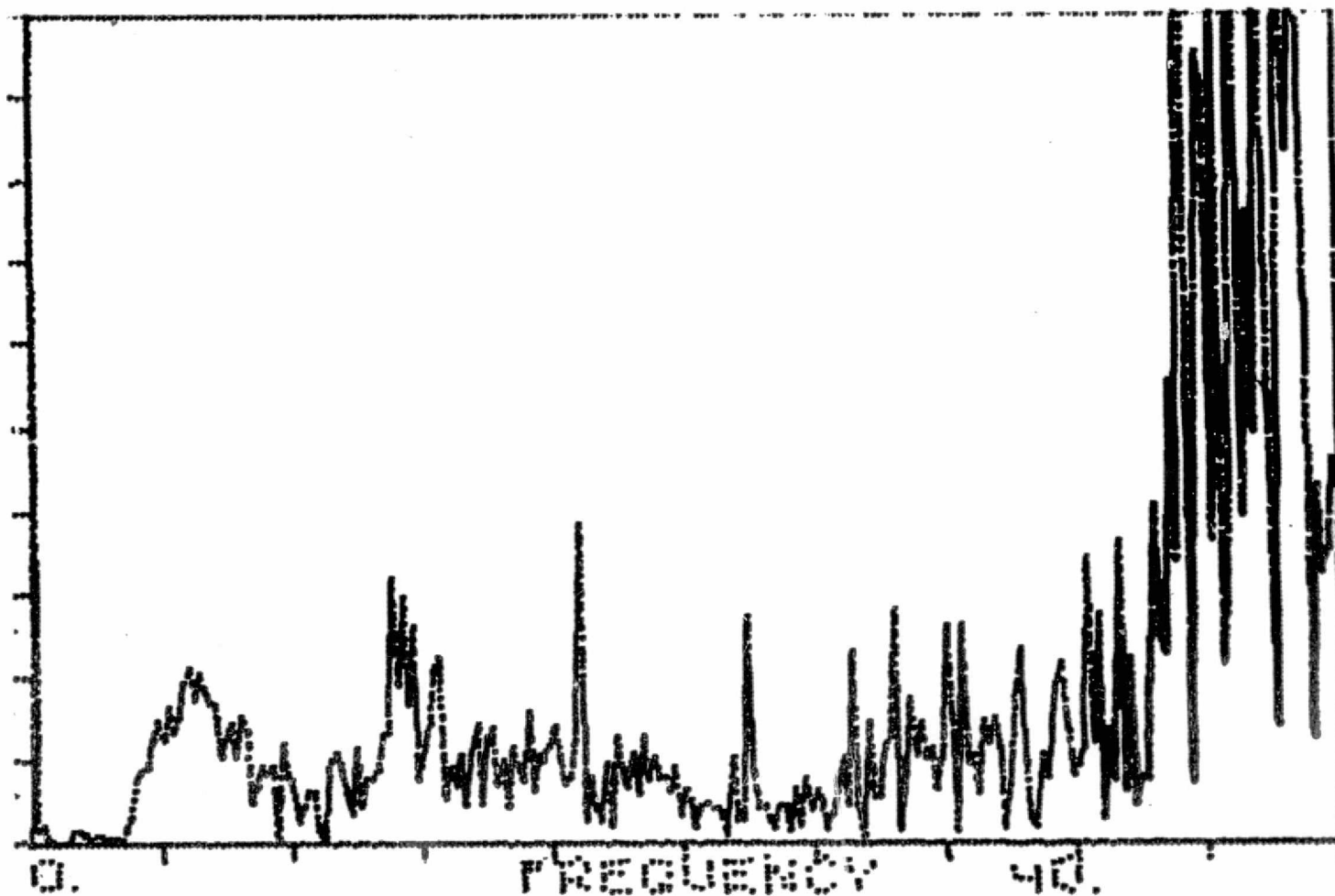
SIZE= 256

AV3/FL1

1.

MAGN

0.



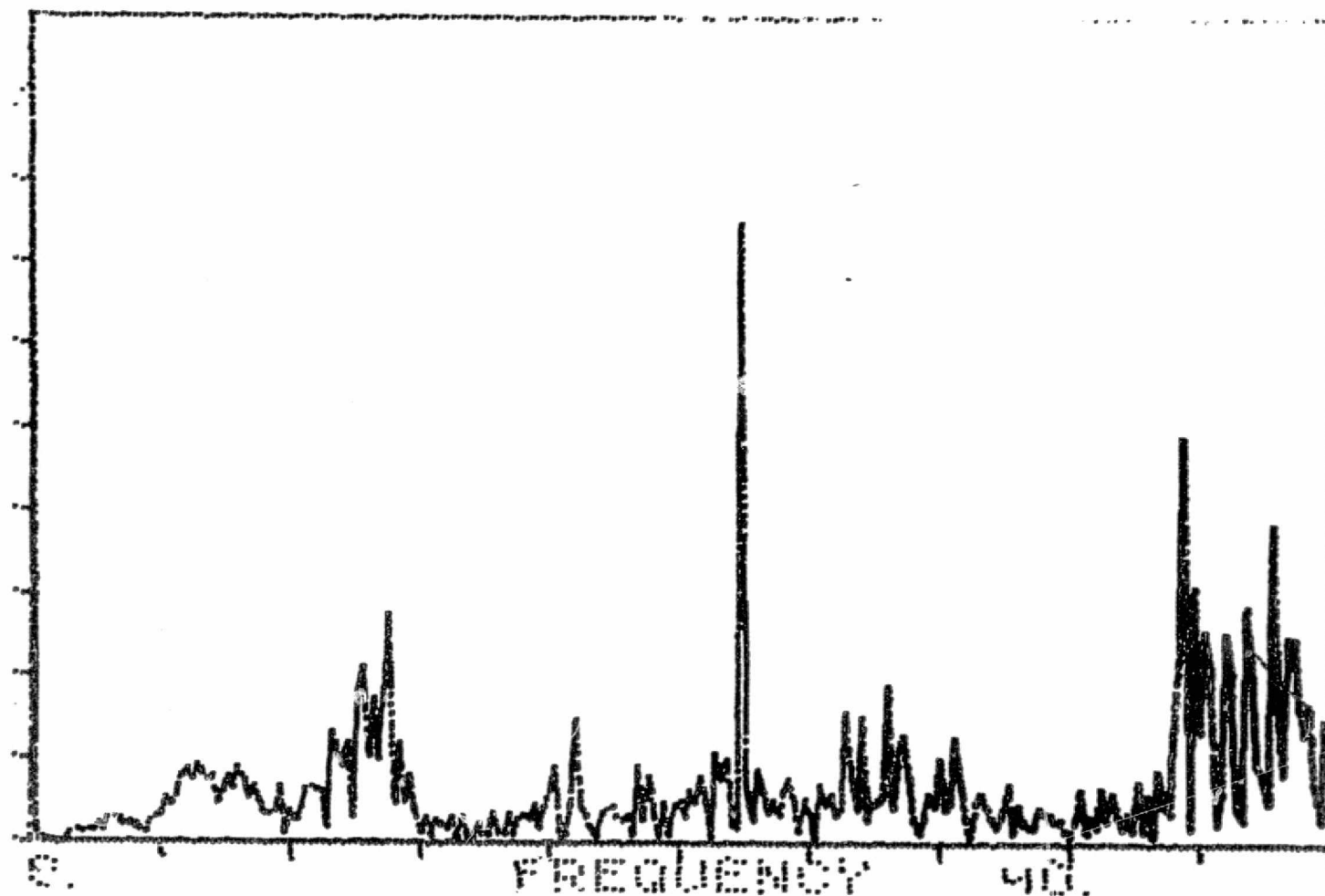
COMPLEX

SIZE= 356

a.

11404

0.



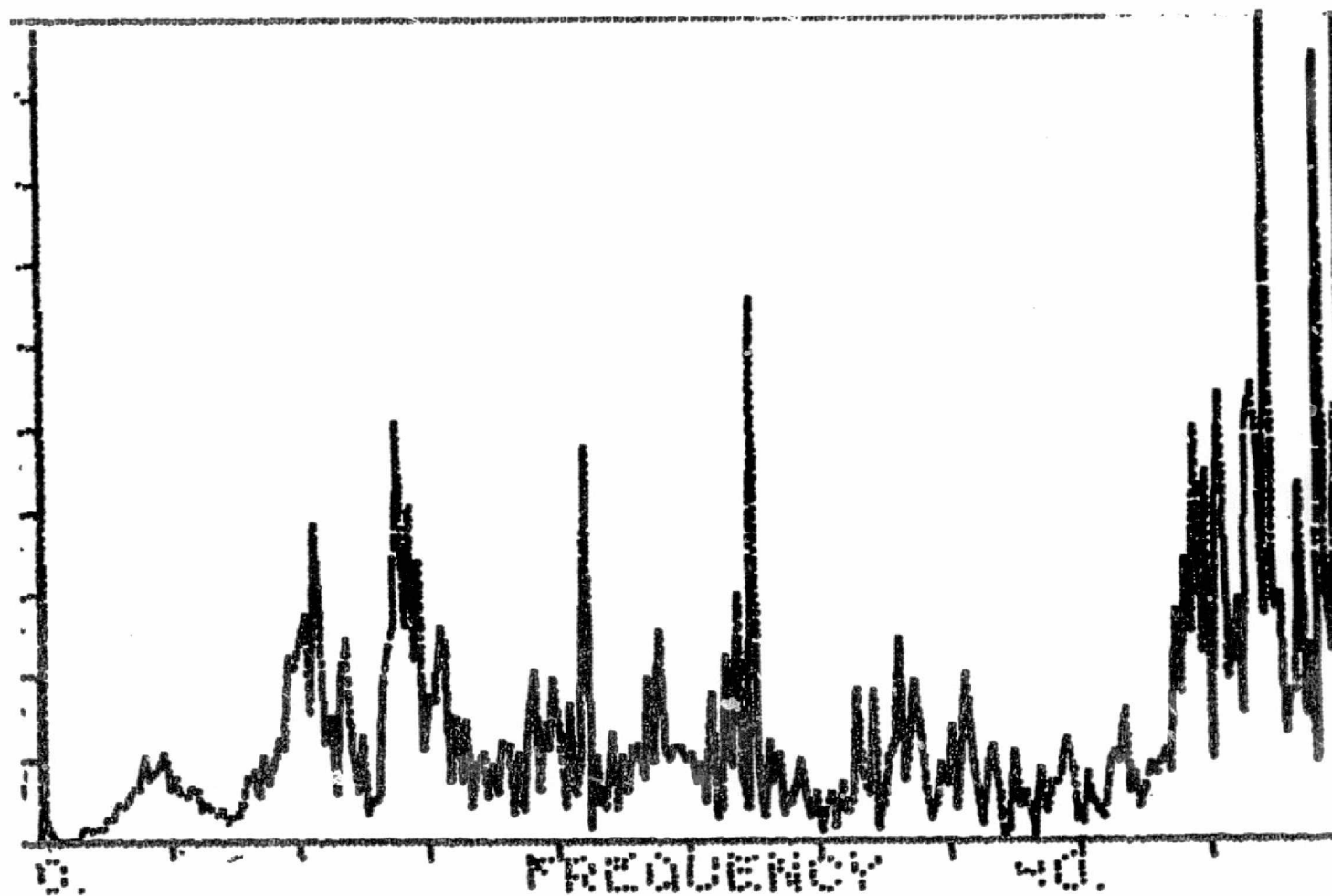
COMPLEX

SIZE= 256

3.

MAGN

0.



COMPLEX

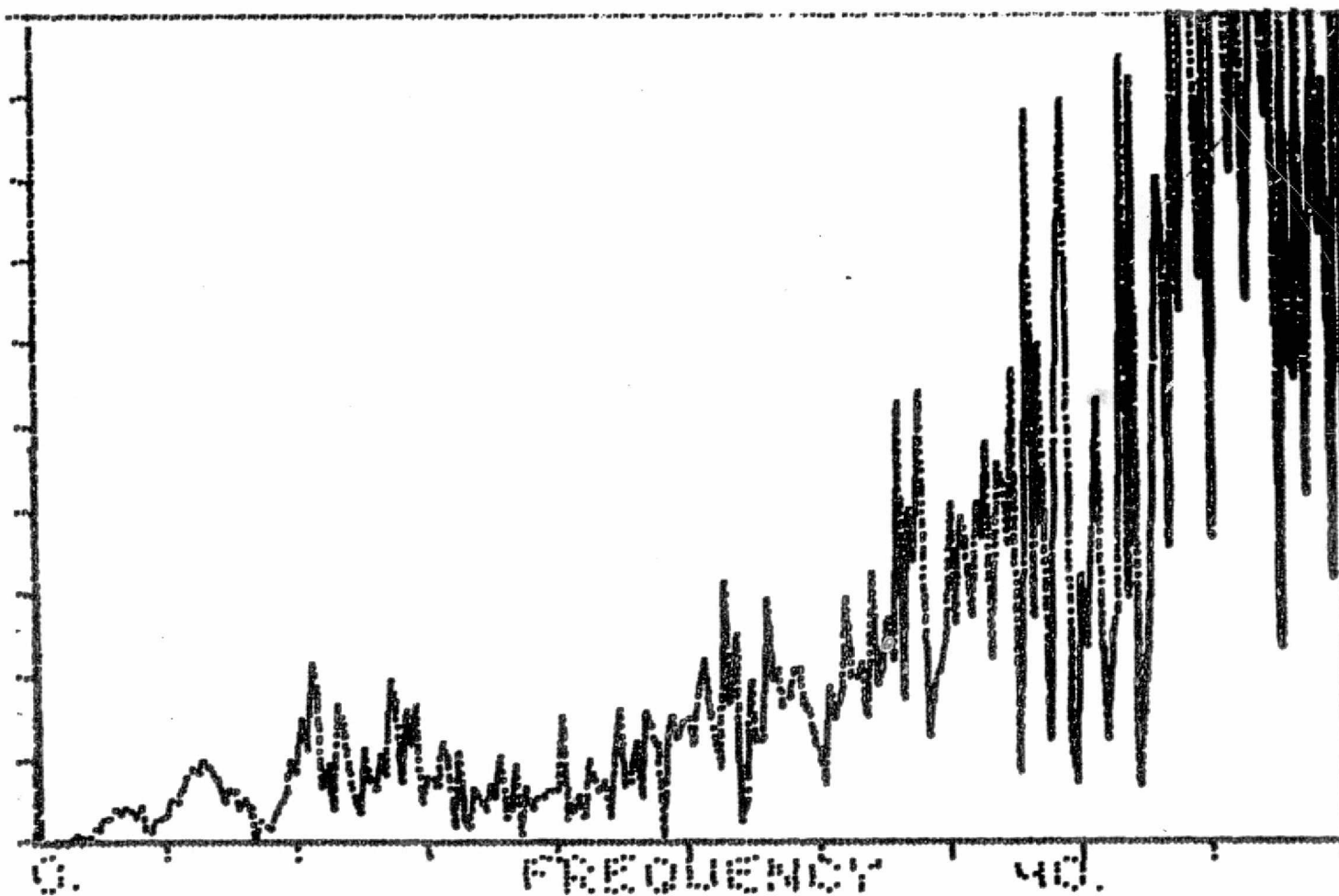
SIZE= 256

AV6/FL1

2.

PACK

0.



COMPLEX

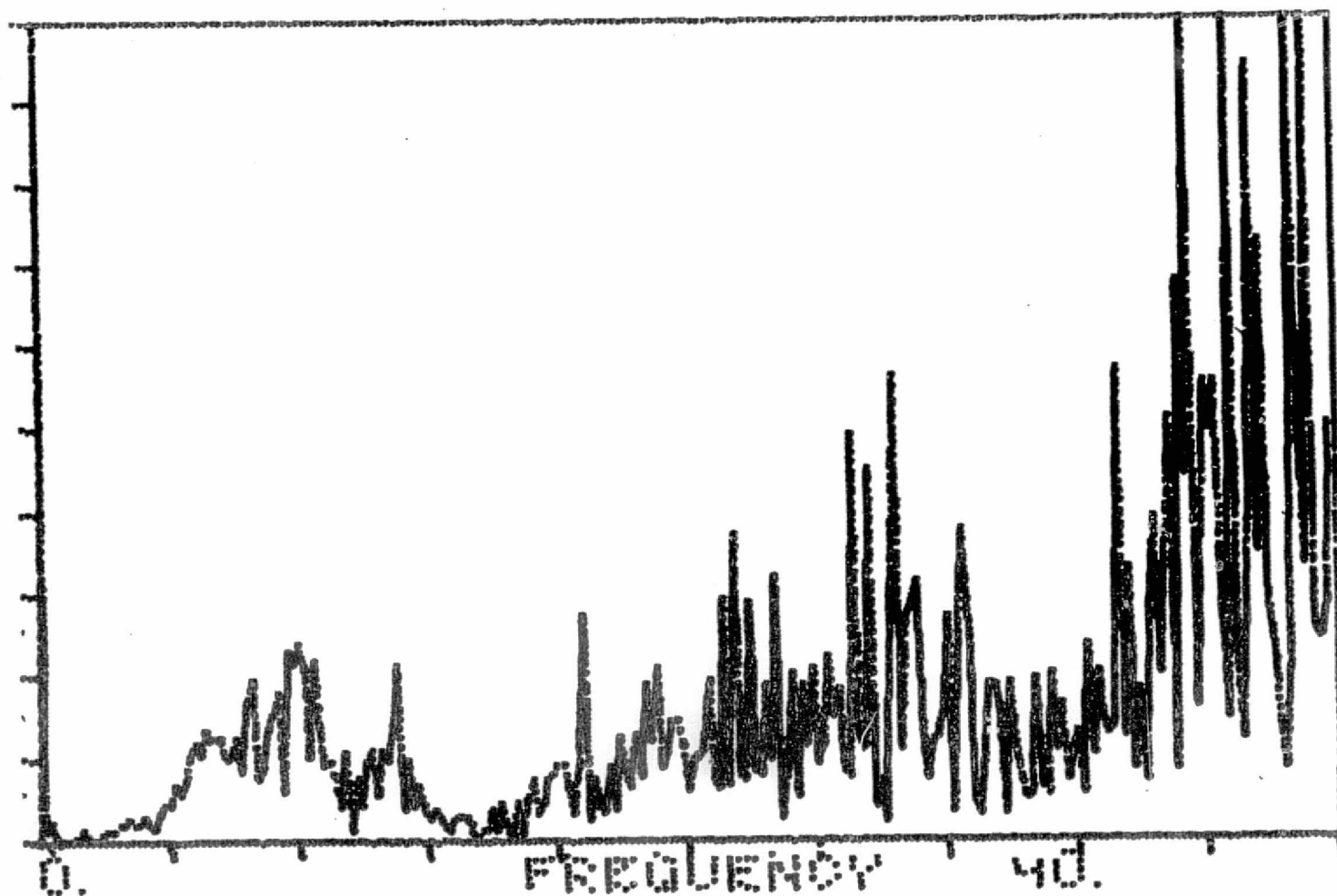
SIZE= 256

AL1/FL1

3.

HPGN

0.



COMPLEX

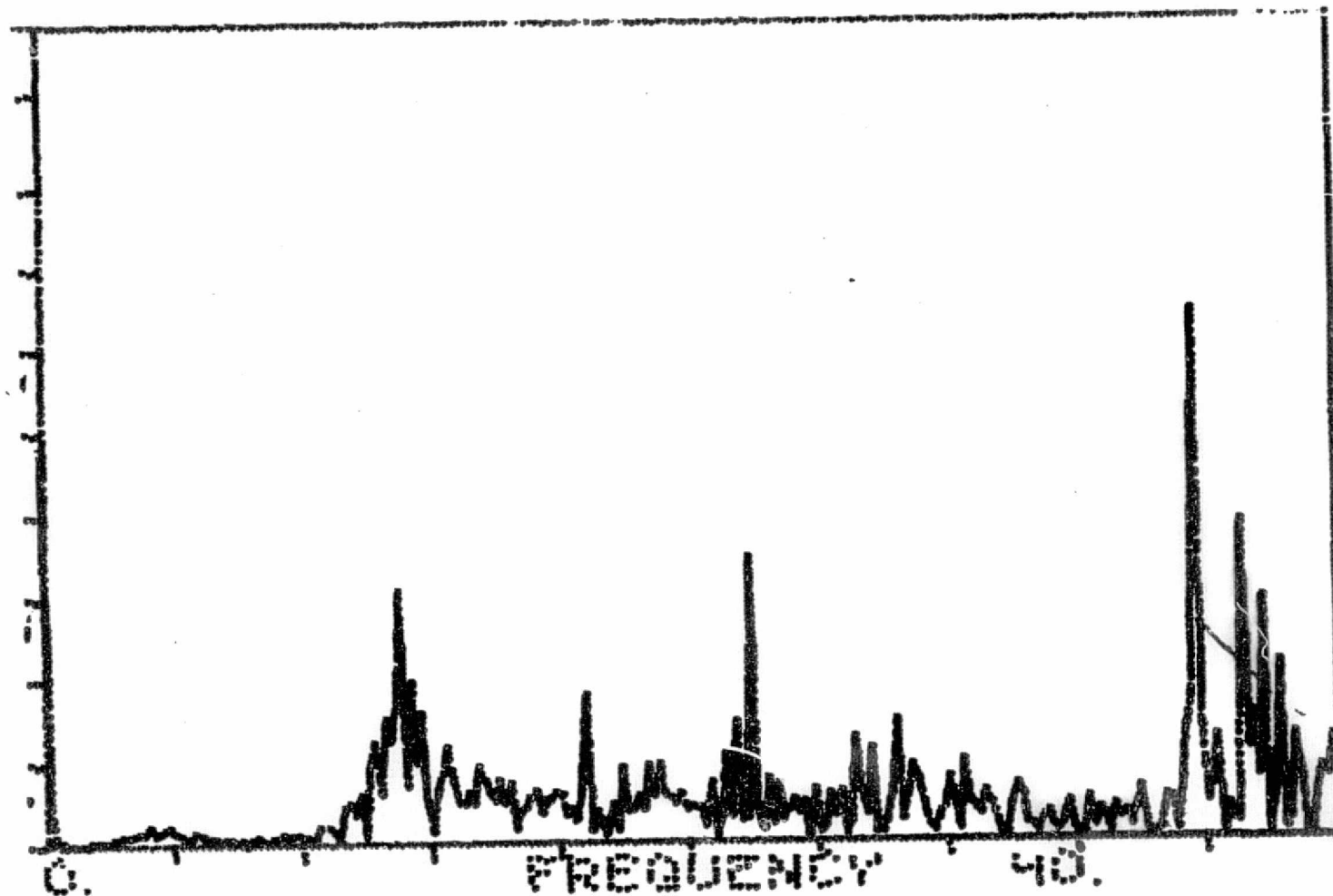
SIZE= 256

AL2/FL1

2.

MAGN

0.



COMPLEX

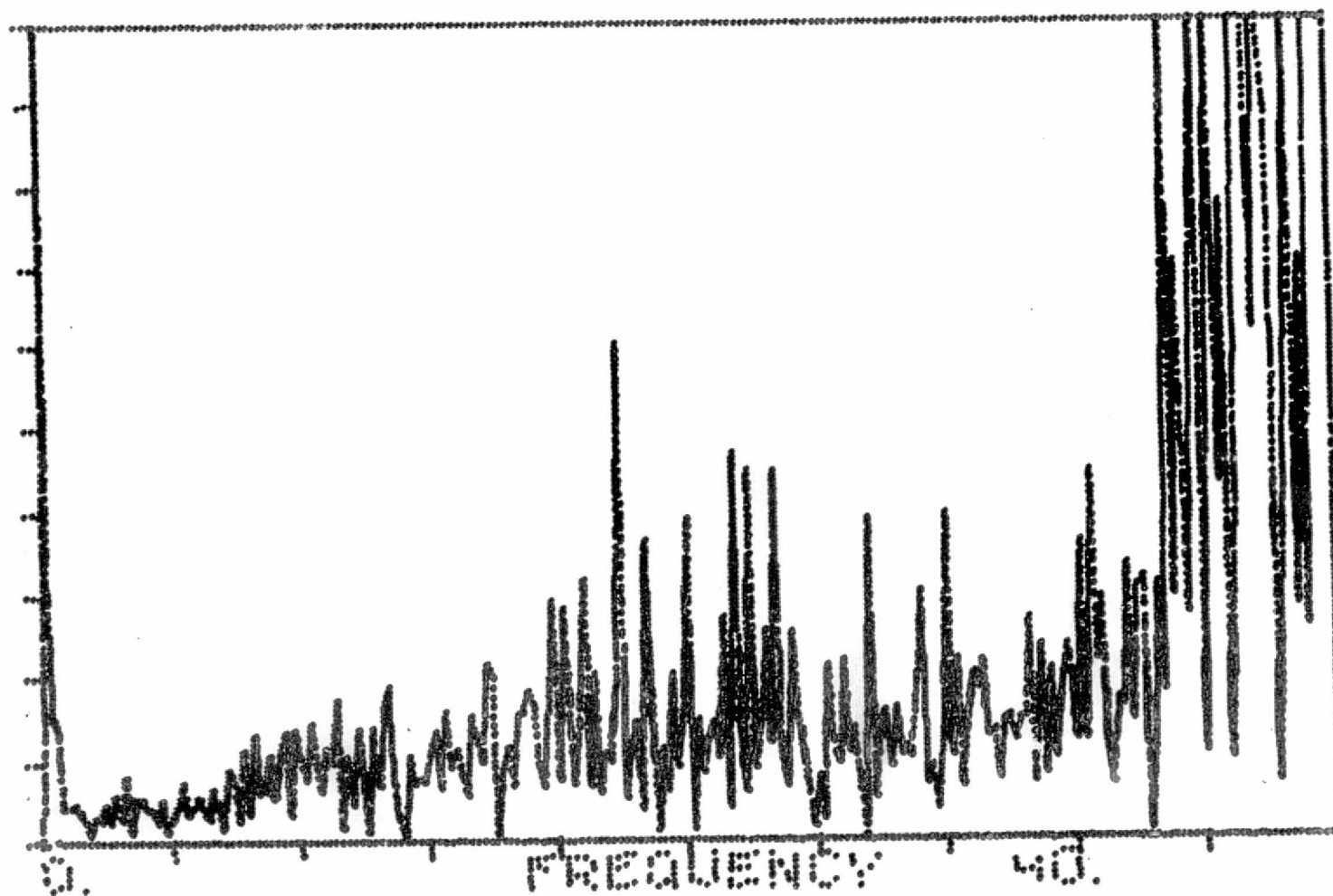
SIZE= 256

AL3/FL1

10.

HIGH

0.



COMPLEX

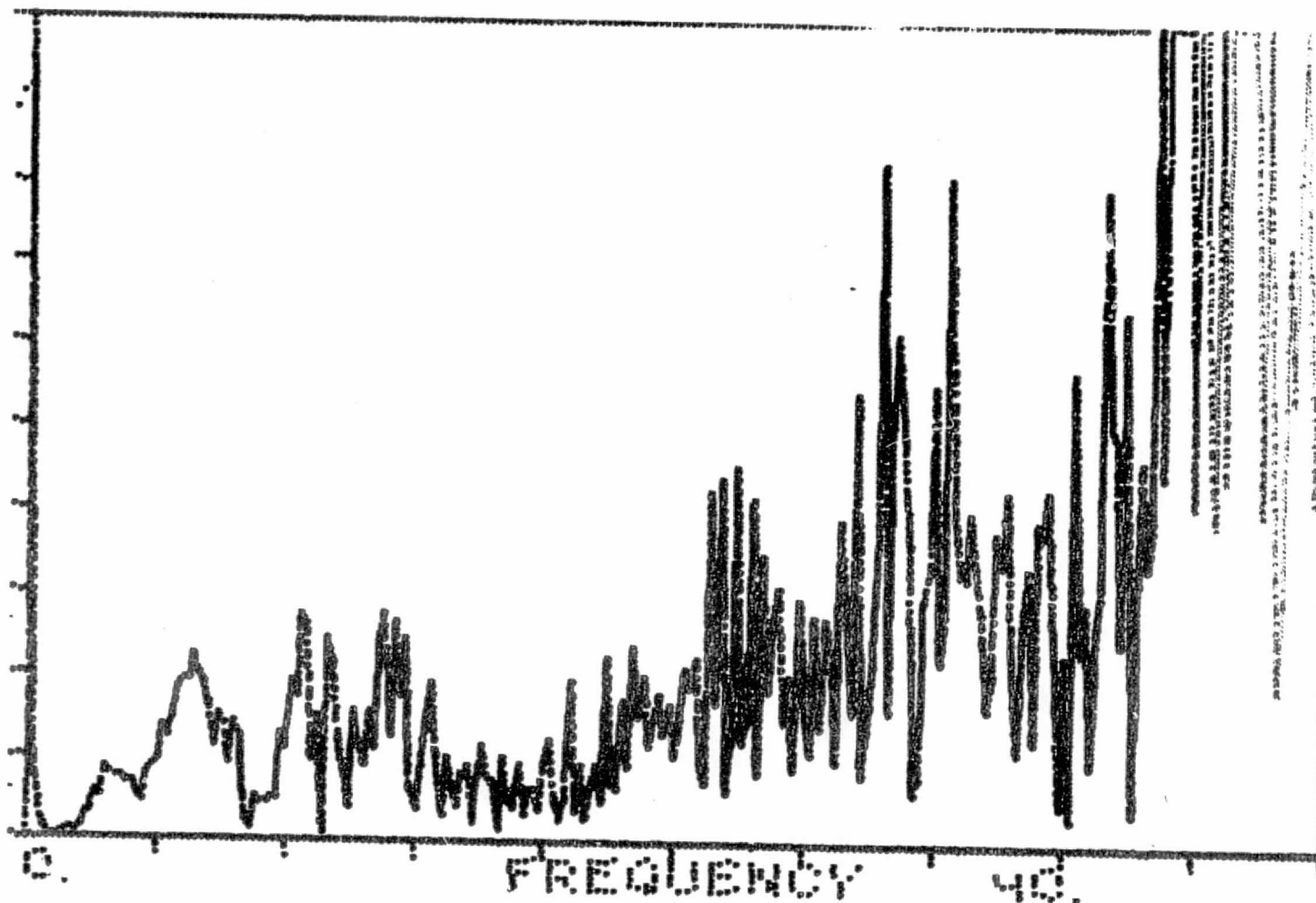
SIZE= 256

AL6/FL1

1.

MAGN

0.



COMPLEX

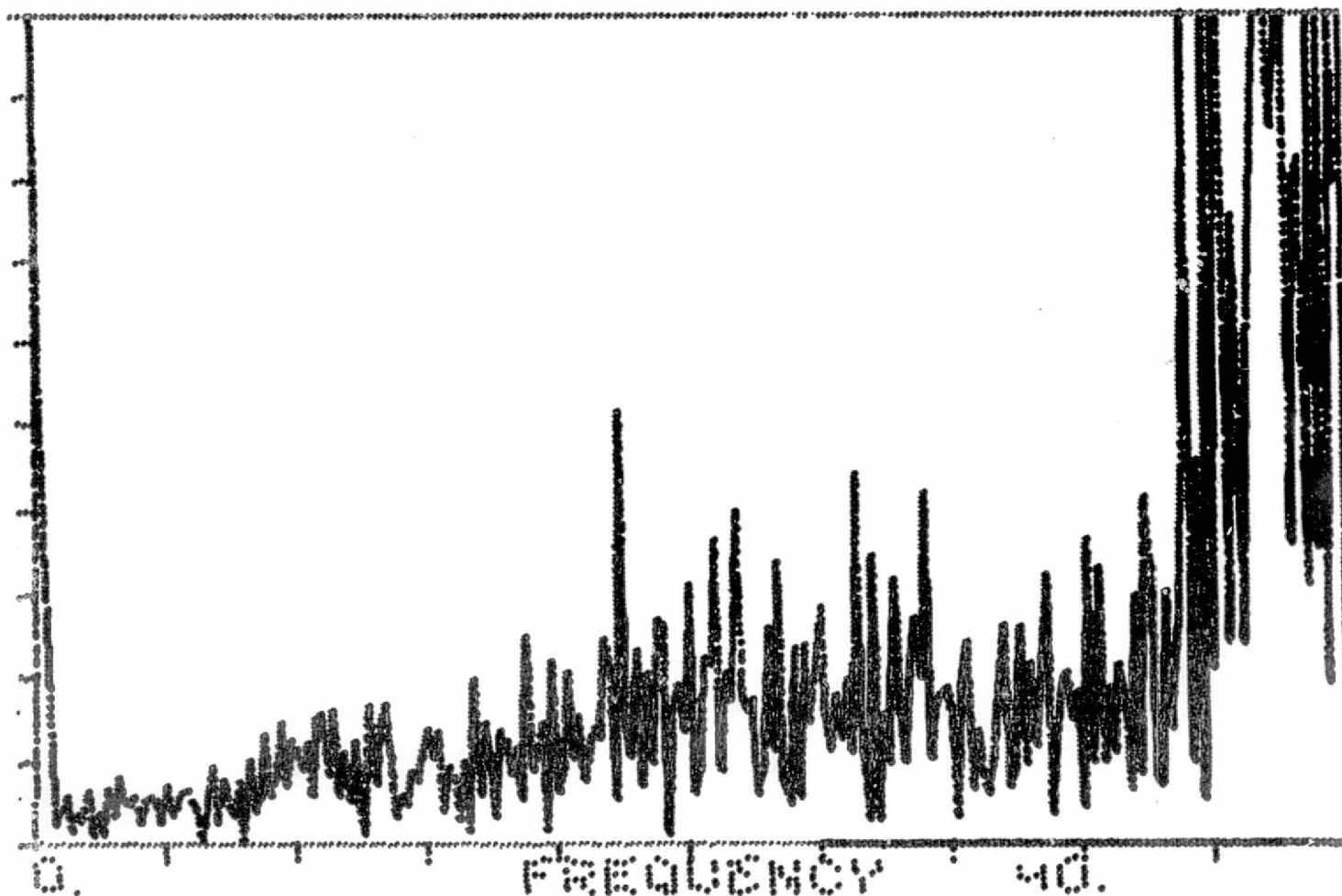
SIZE= 256

AL7/FL1

10.

MAGN

0.



COMPLEX

SIZE= 256

8.

mag

0.

0. FREQUENCY 40.

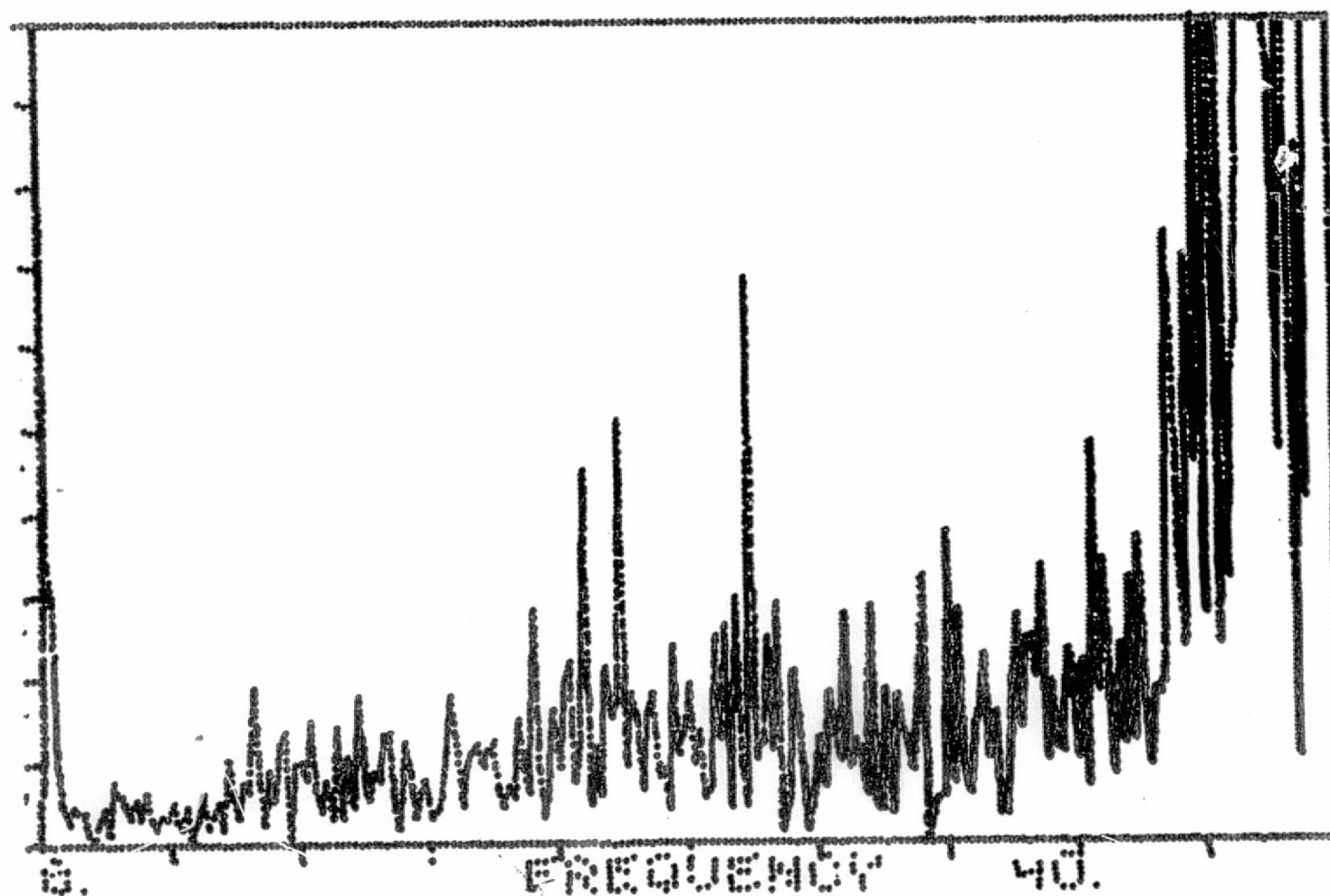
COMPLEX SIZE 256

$\Delta P/FL1$

10.

1464

0.



COMPLEX

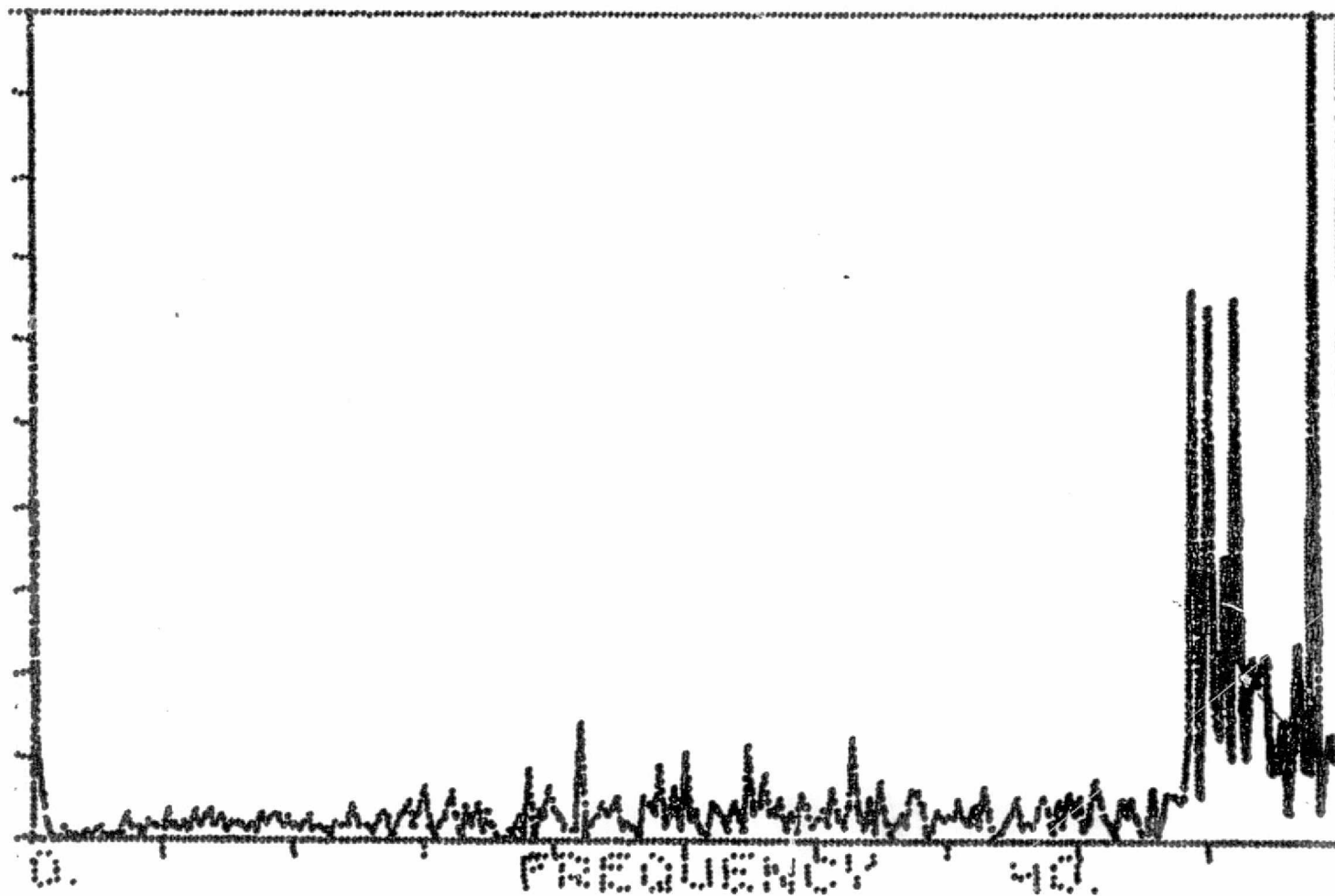
SIZE 256

AL4/FL1

50.

17904

0.



COMPLEX

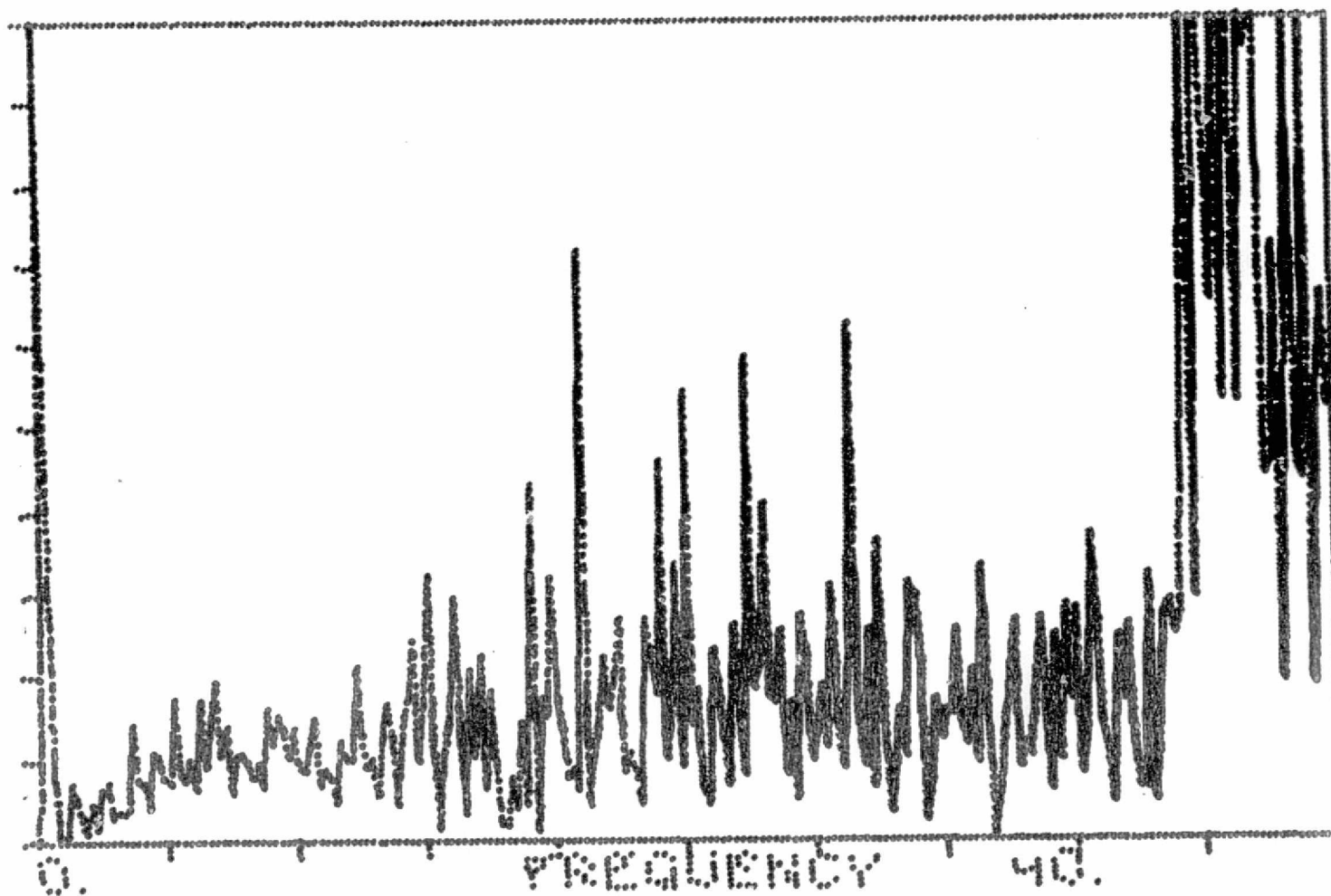
SIZE= 256

AL5/FL1

10.

11464

0.

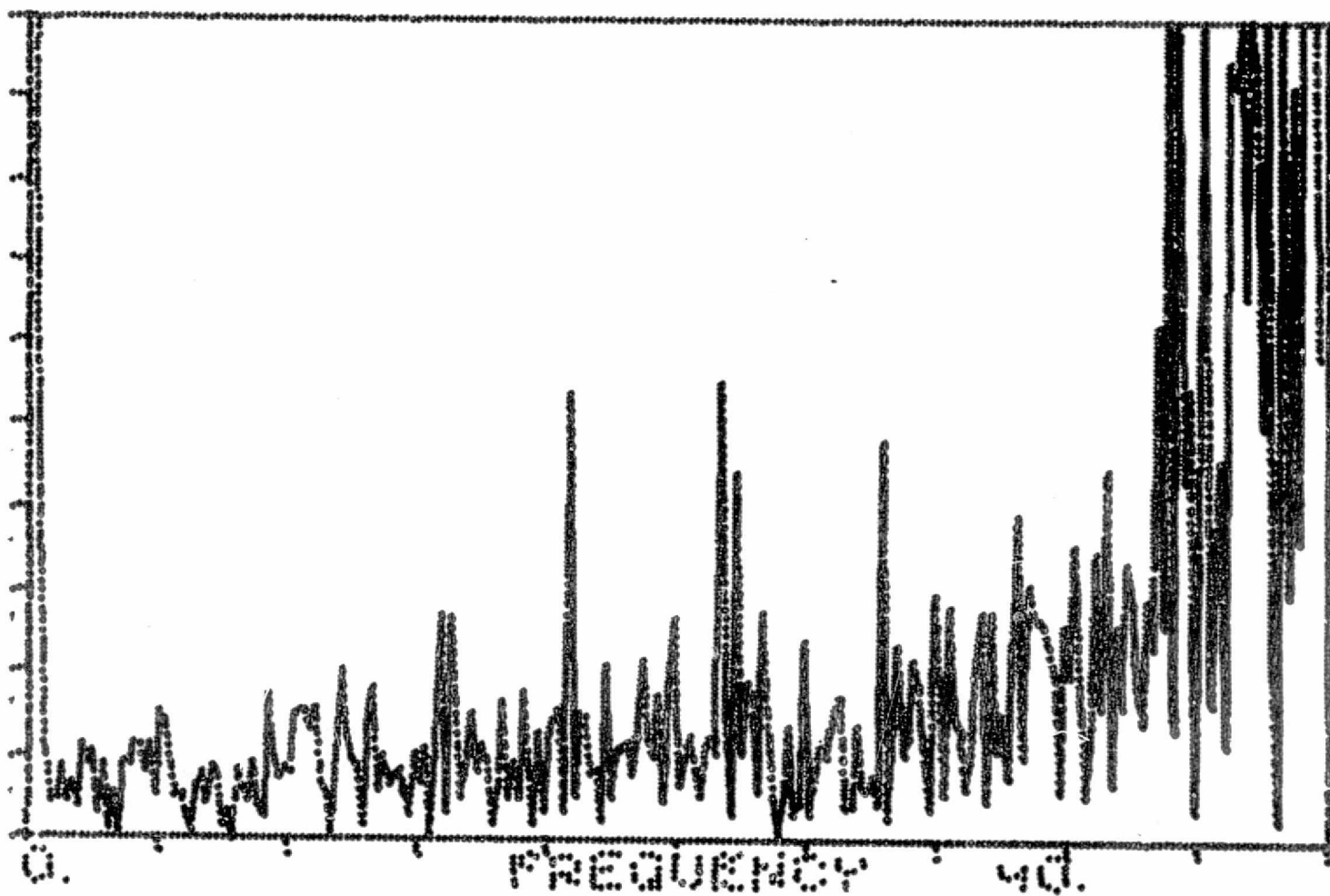


COMPLEX

SIZE= 256

30.

max



COMPLEX

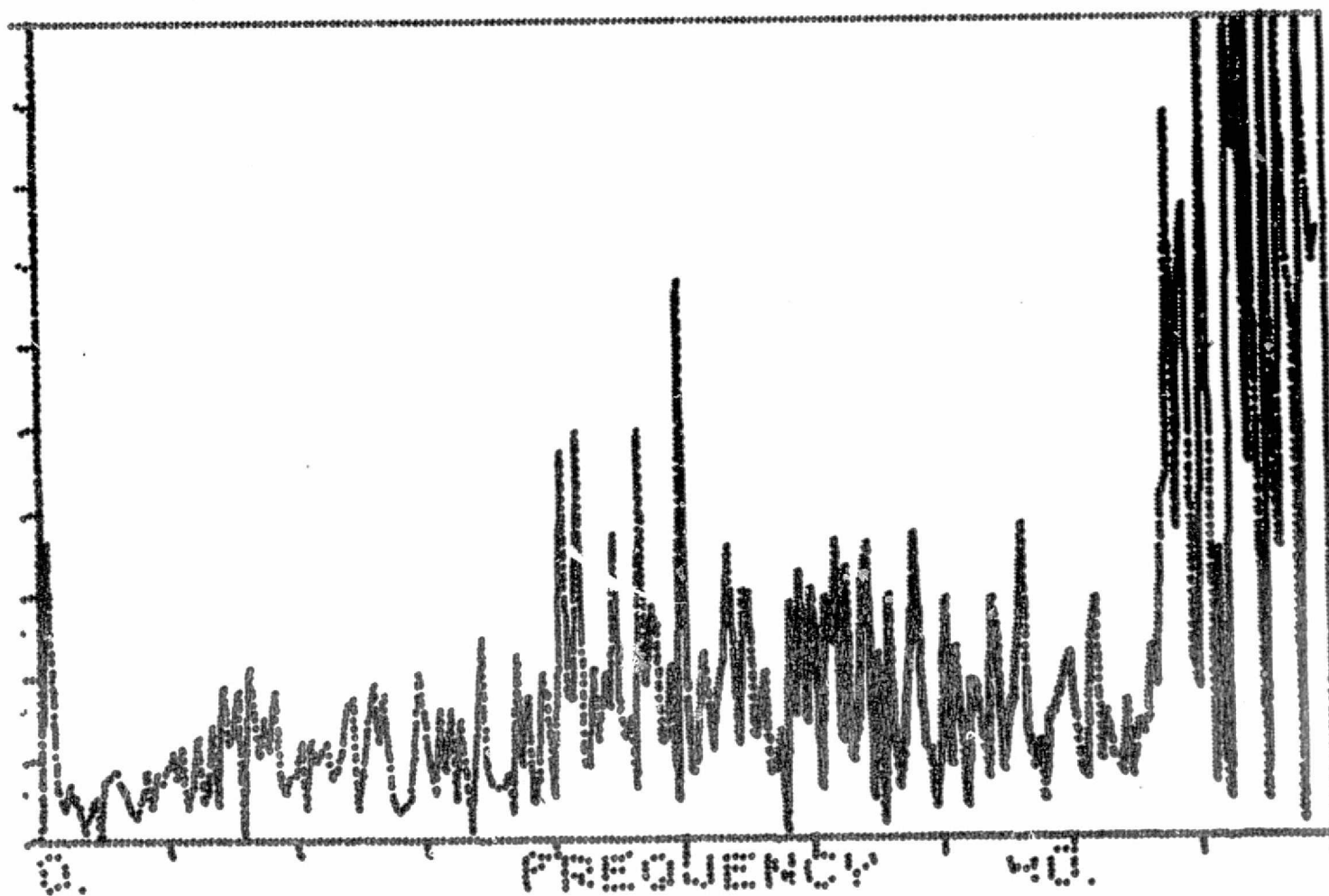
SIZE= 256

AL8/FL1

10.

MAGN

0.



COMPLEX

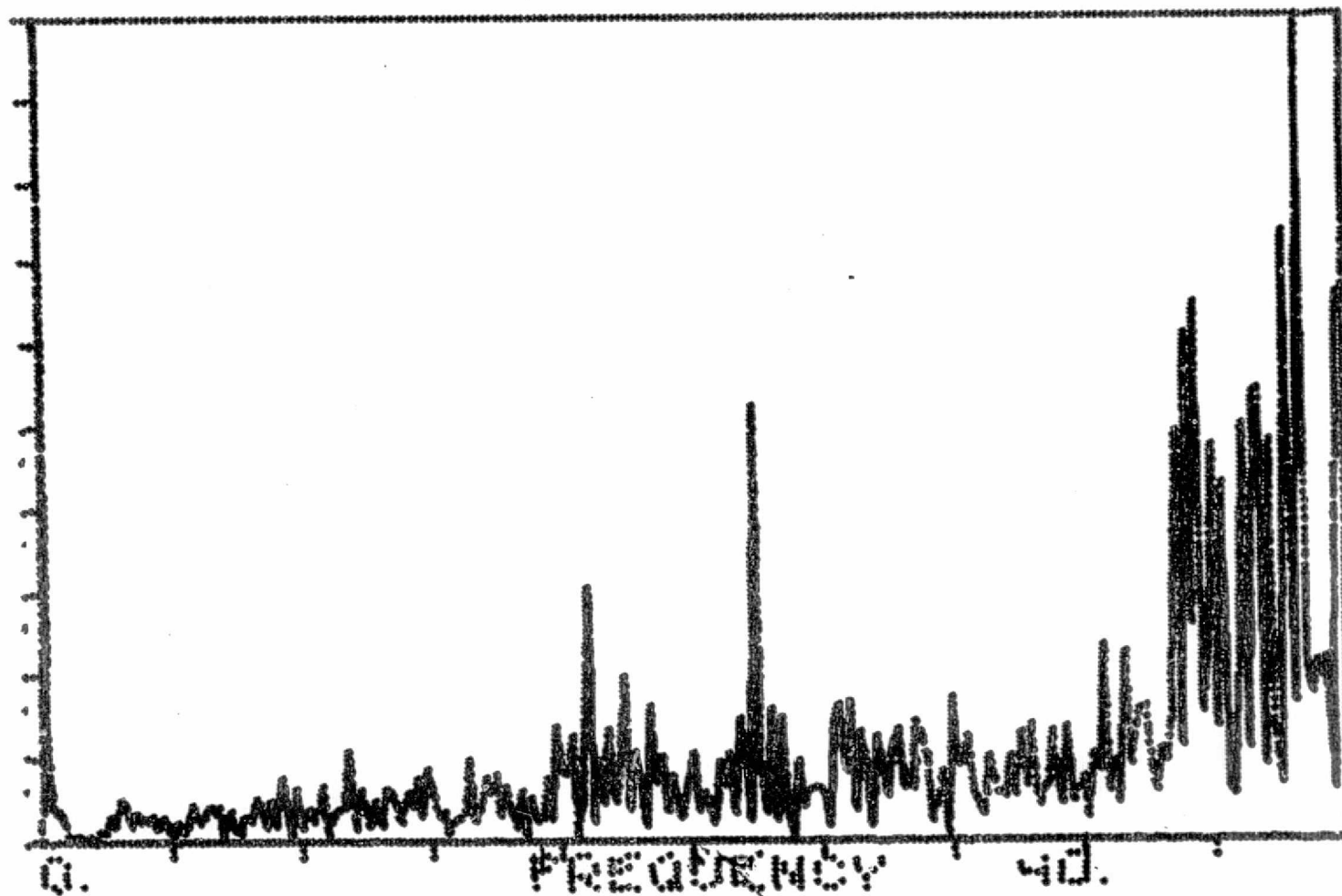
SIZE= 256

AL9/FL1

20.

HPBW

0.



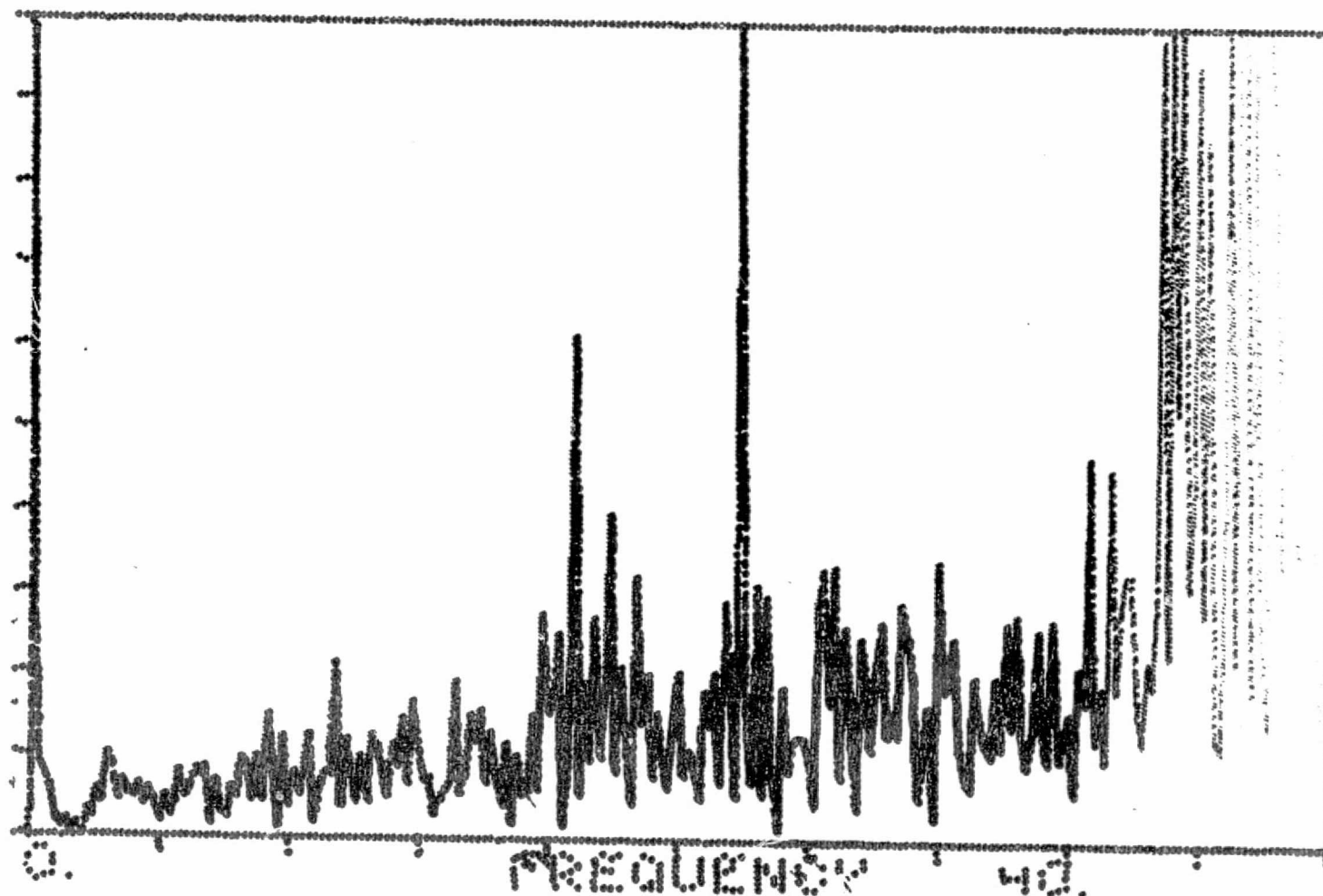
COMPLEX

SIZE= 256

10.

1964

0.



COMPLEX

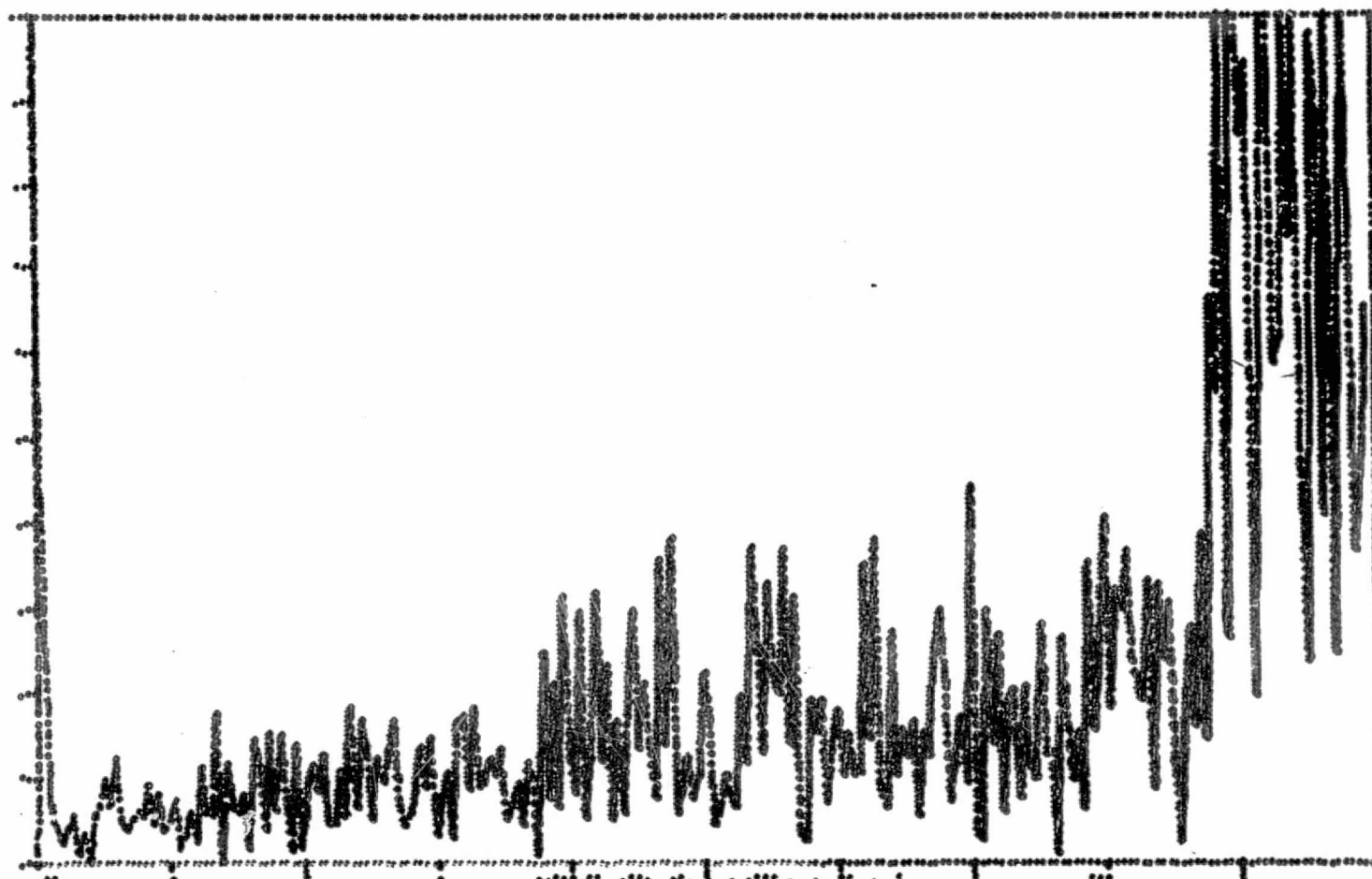
SIZE= 256

AL10/FL1

10.

11904

0.



0.

FREQUENCY

40.

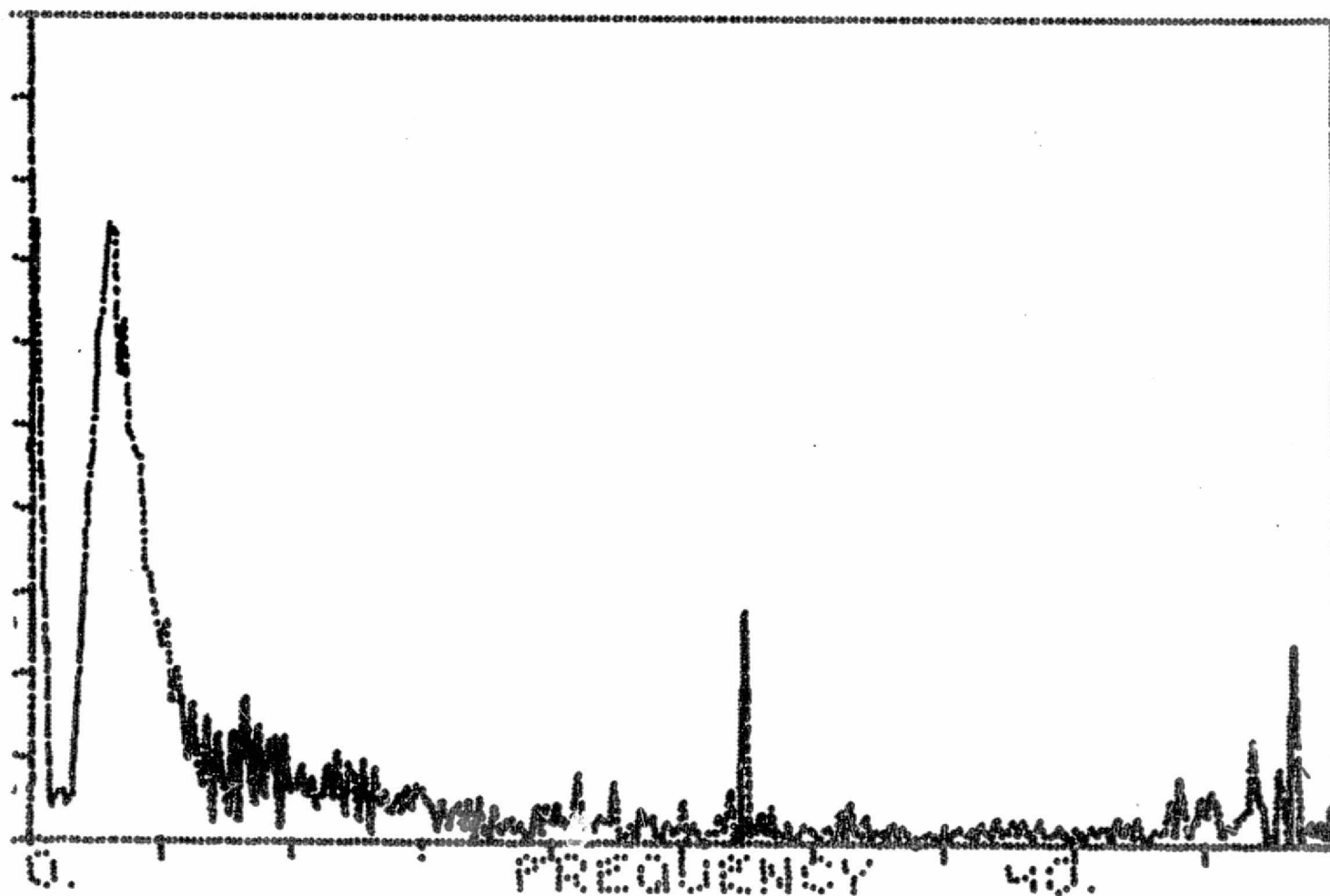
COMPLEX

SIZE= 350

2.

MAON

2.



COMPLEX

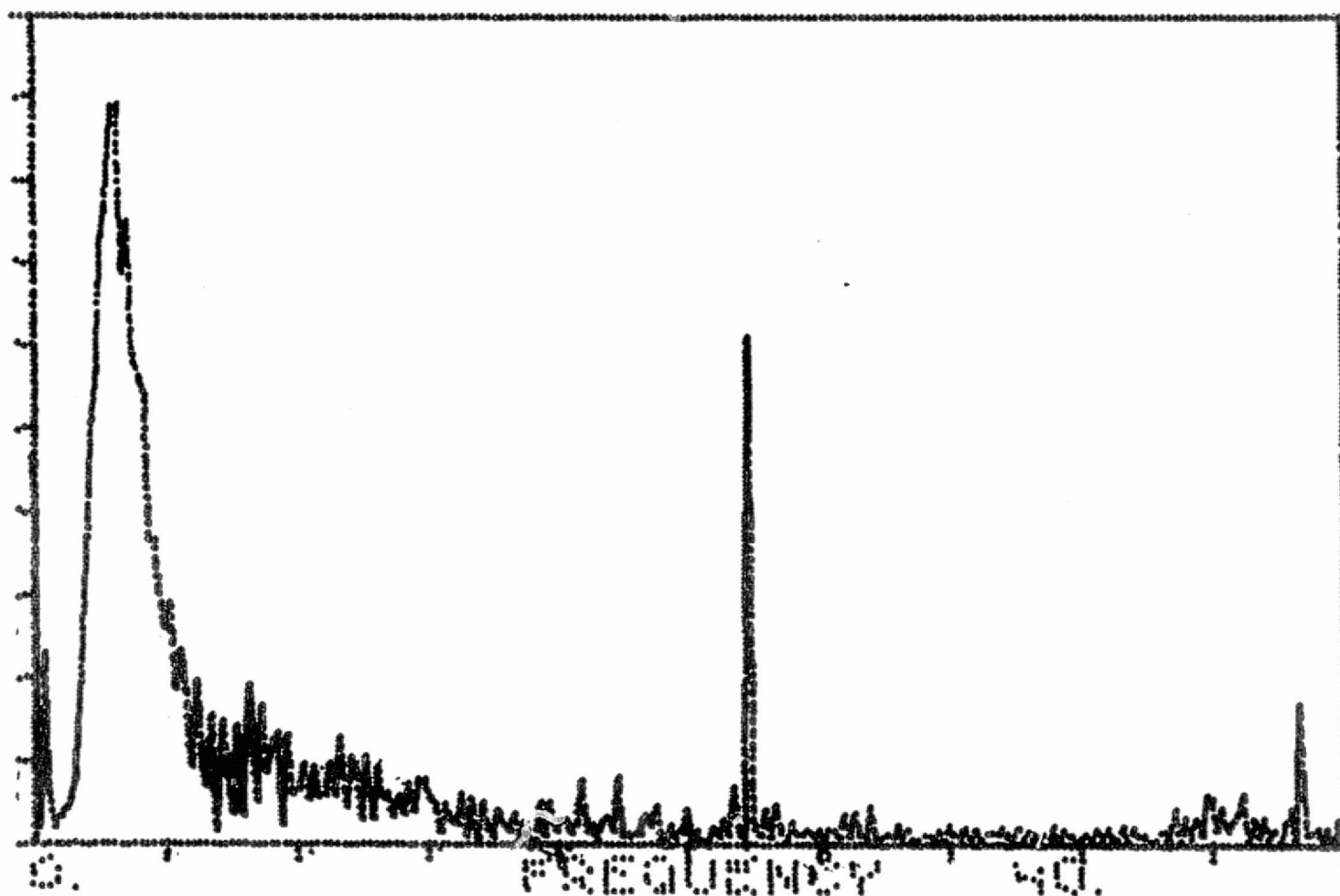
SIZE: 256

DL1/FL1

2.

1964

0.



COMPLEX

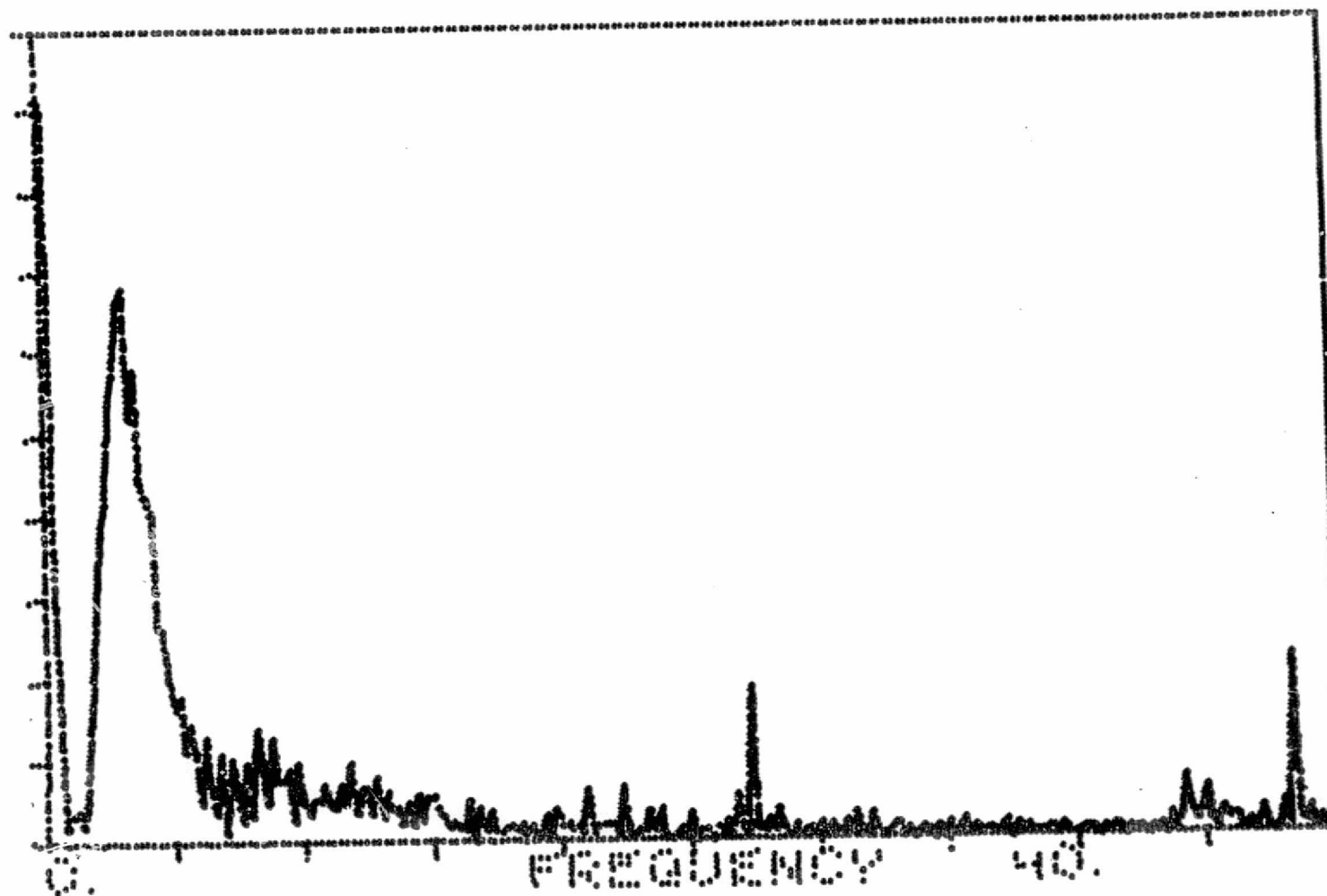
SIZE= 250

DL2/FL1

1.

11404

0.



COMPLEX

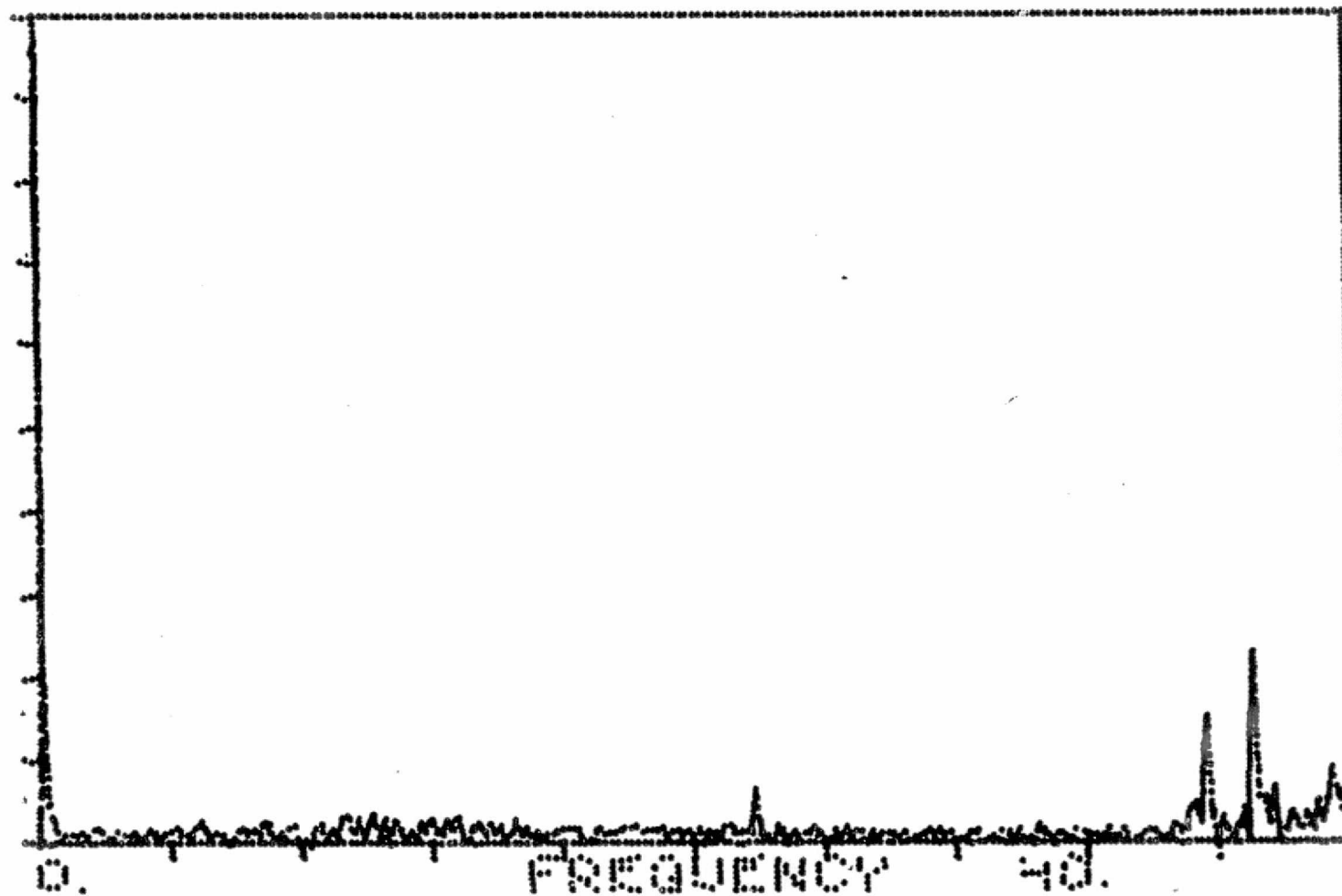
SIZE 255

DL3/FL1

1.

MAON

11.



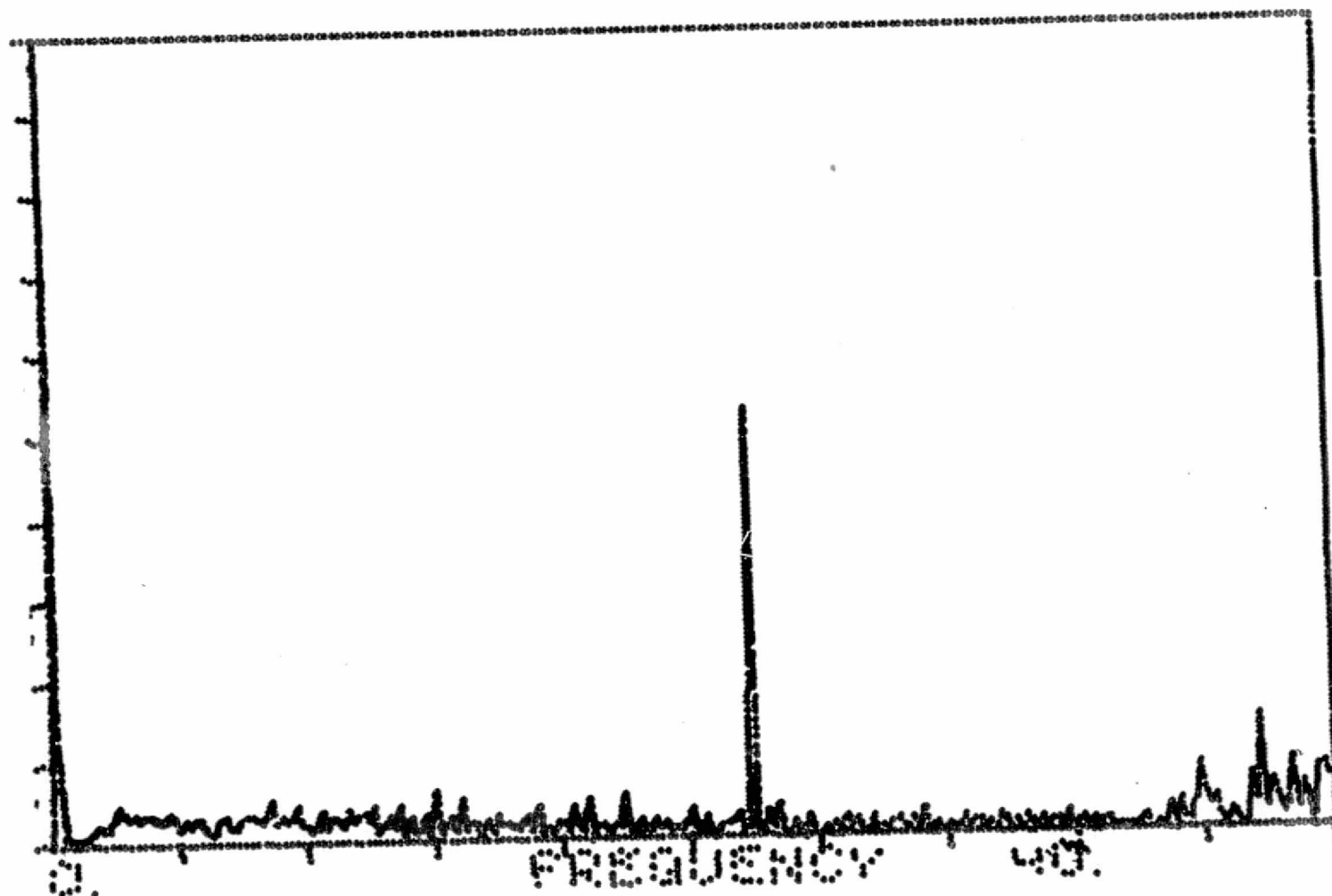
COMPLEX

SIZE= 256

1.

MAGN

0.



255

COMPLEX

8125 255

1.

11404

1.



COMPLEX

SIZE= 256

BL6/FL1

3.

112014

0.



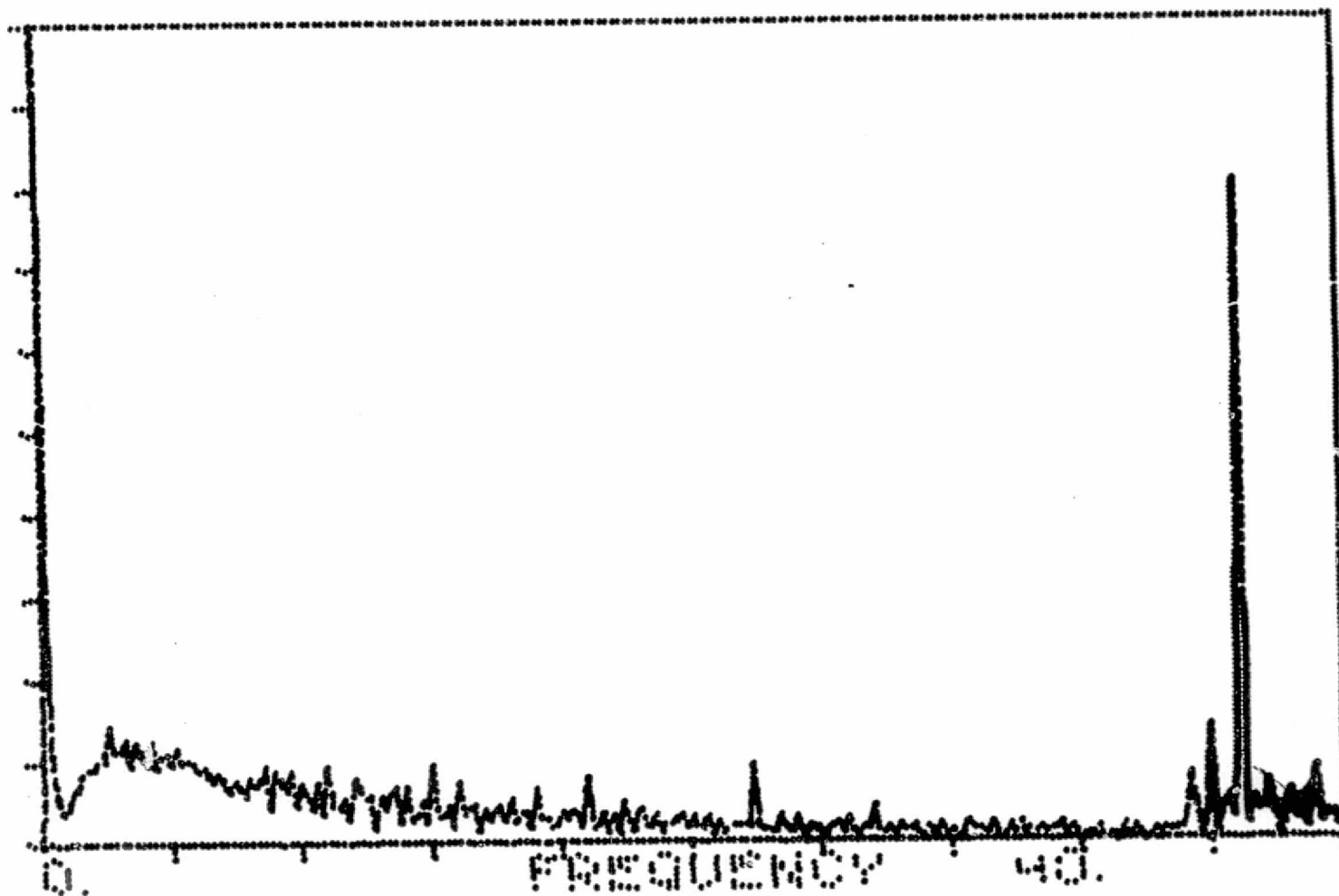
COMPLEX

SIZE= 256

3.

HAON

0.



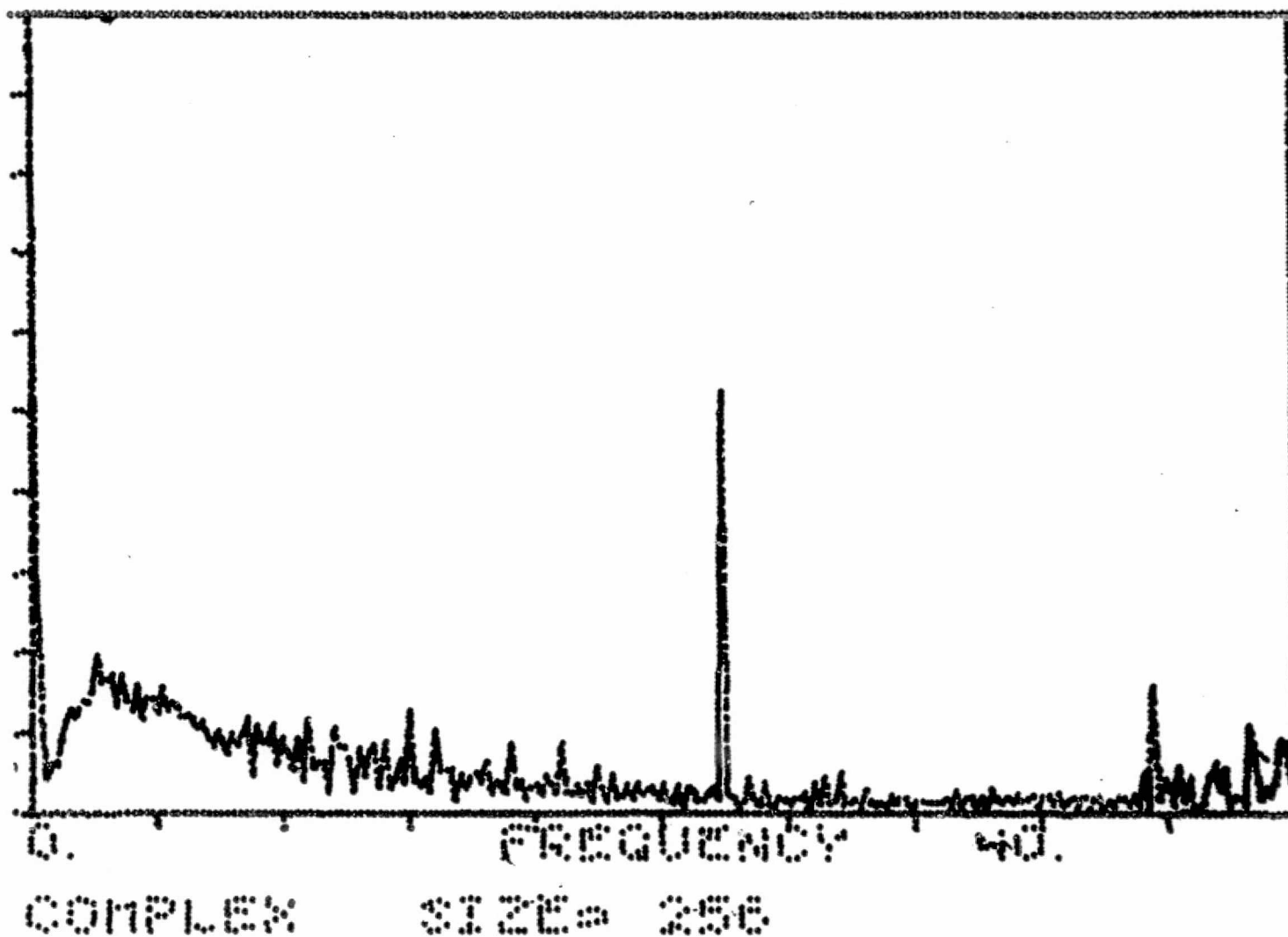
COMPLEX

SIZE= 256

1.

HAON

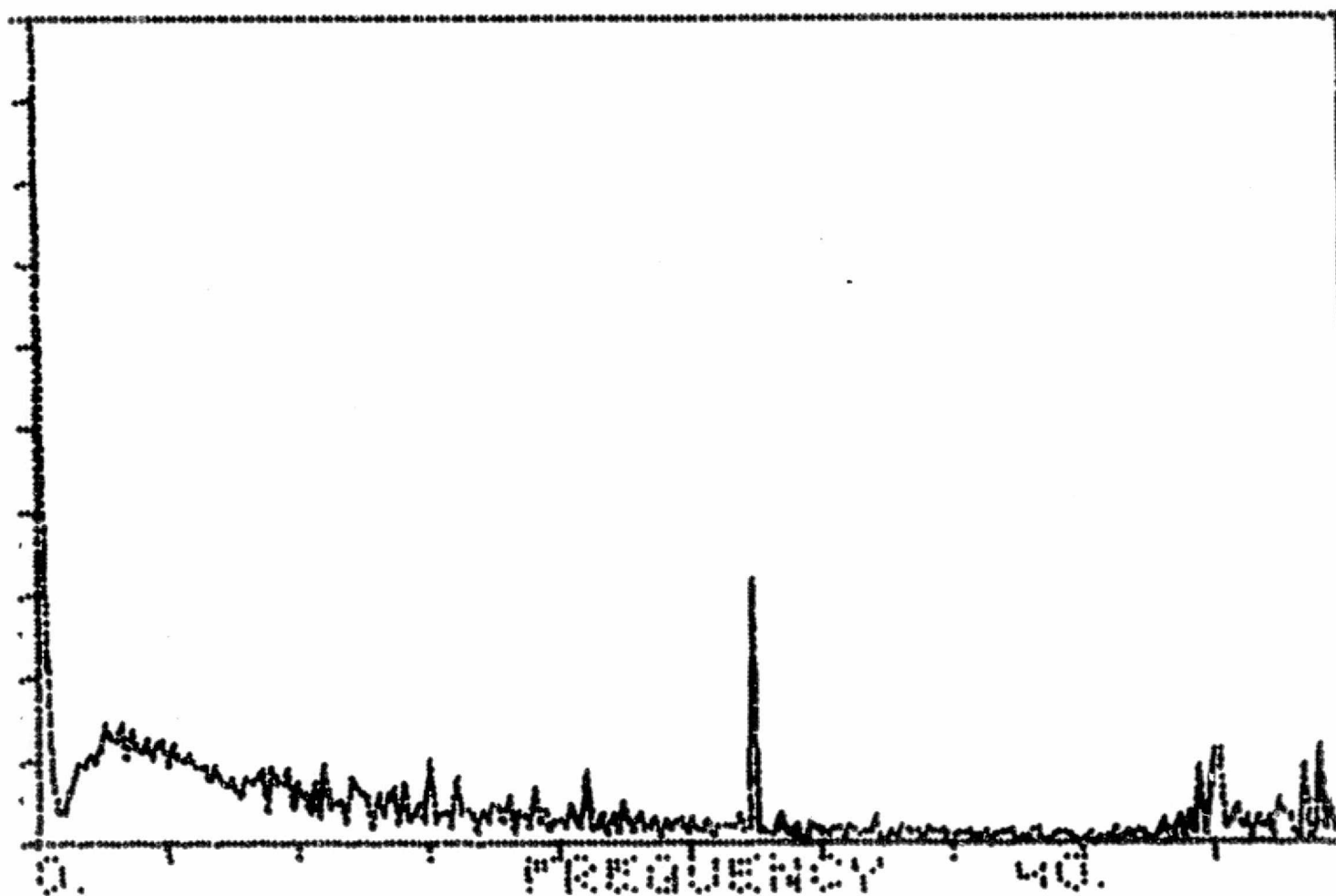
0.



1.

1967

10.



COMPLEX

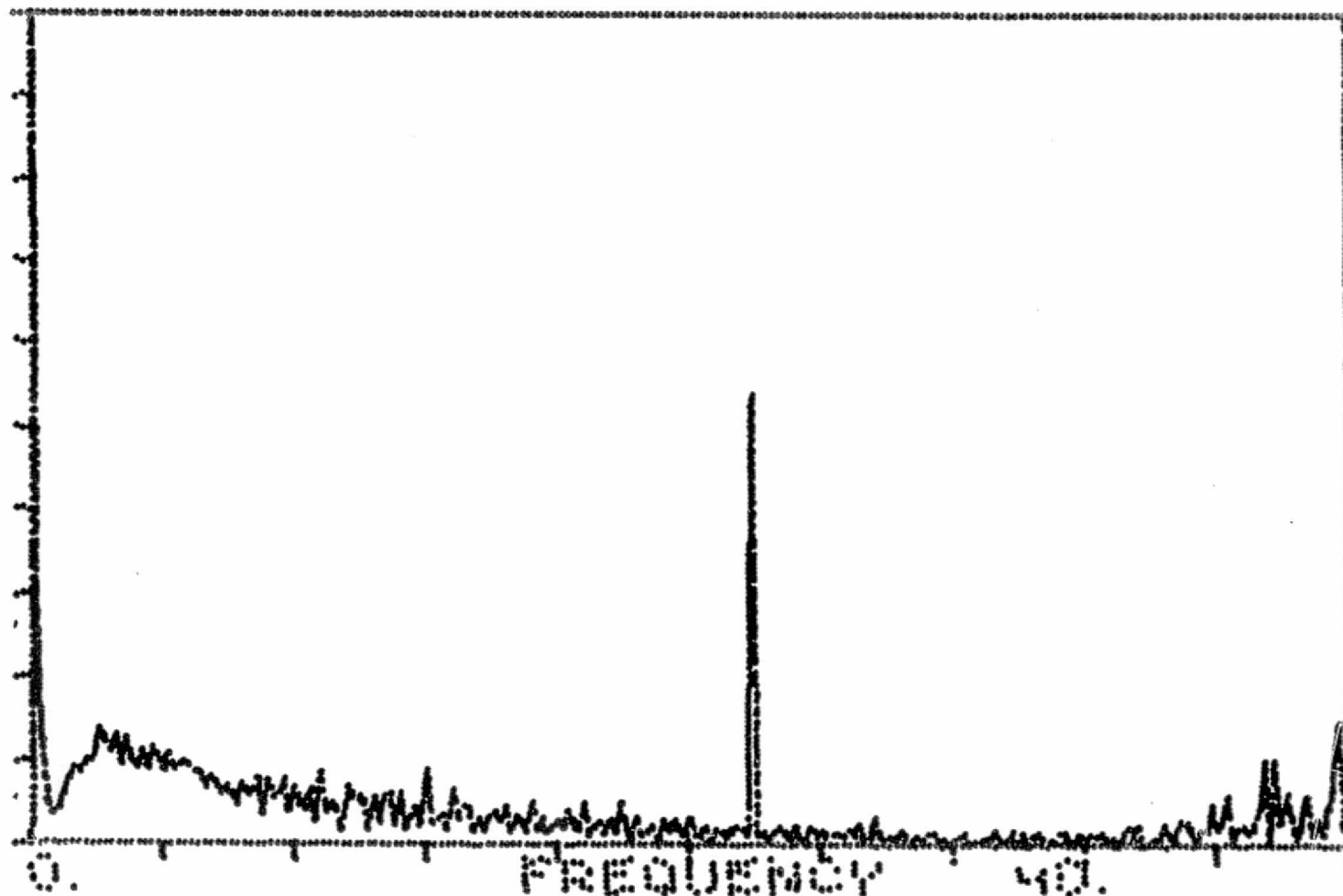
SIZE* 250

DL10/FL1

3.

1964

0.



COMPLEX

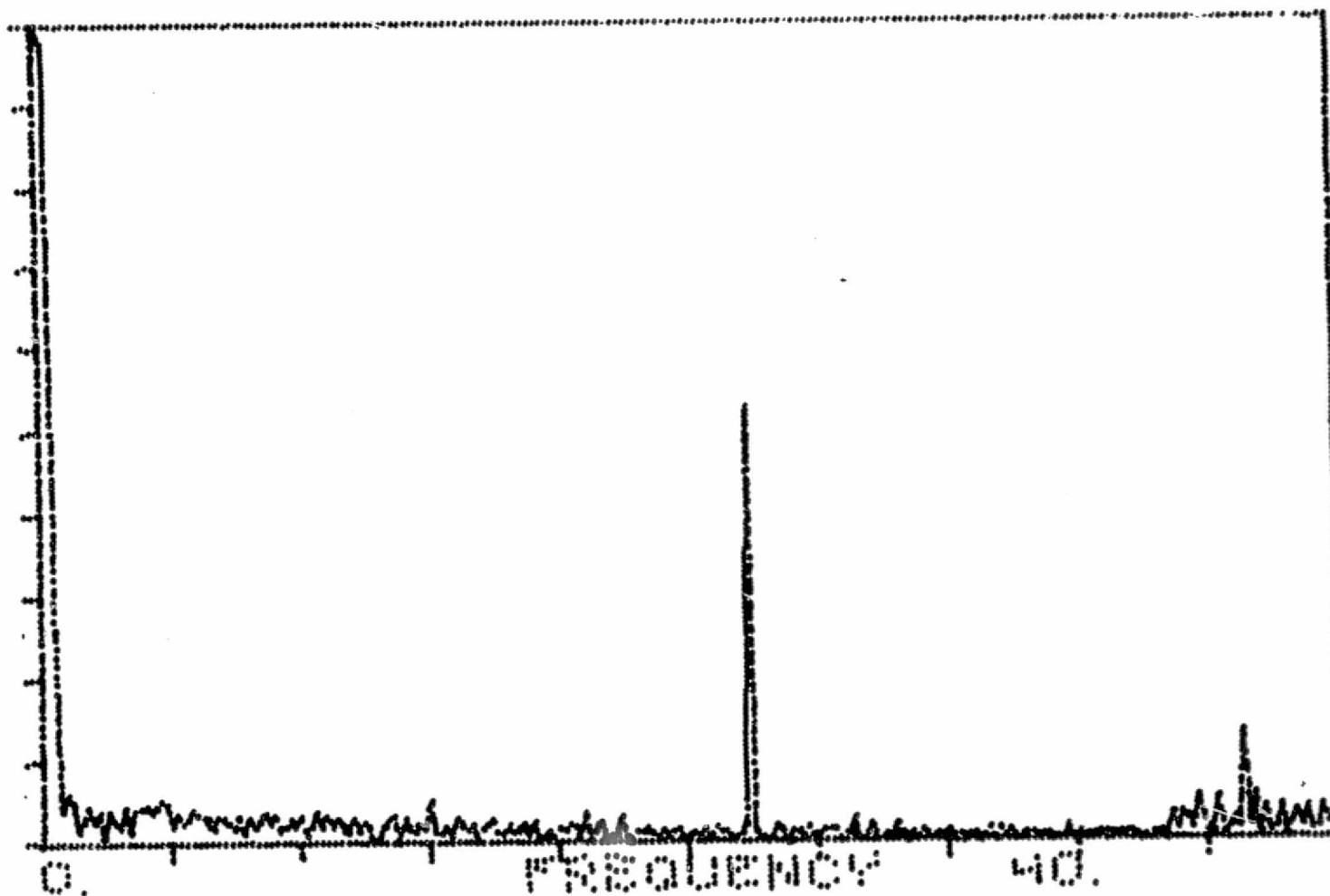
SIZE= 250

DL11/FL1

1.

1904

0.



COMPLEX

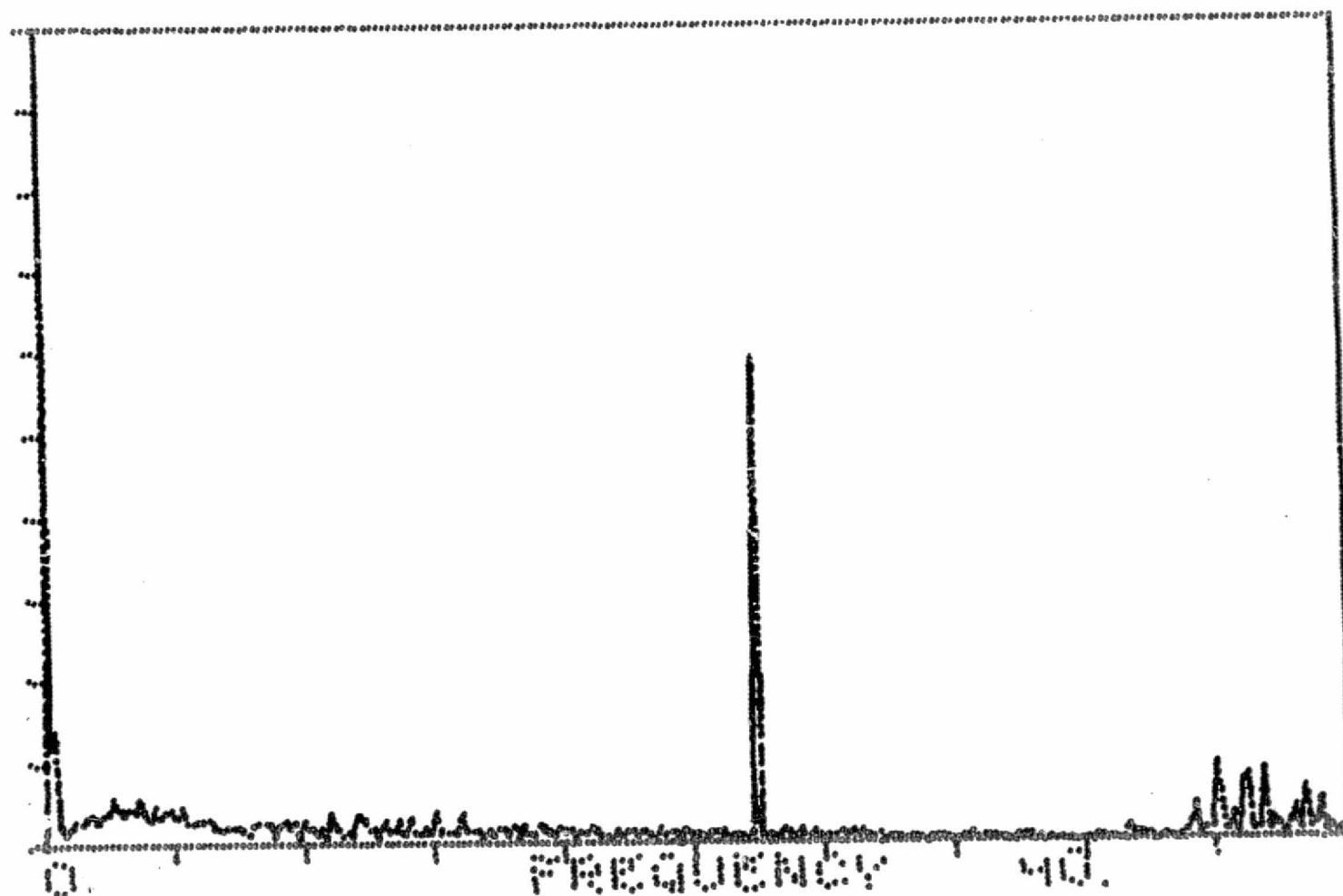
SIZE* 256

DL12/FL1

1.

HAON

0.



COMPLEX

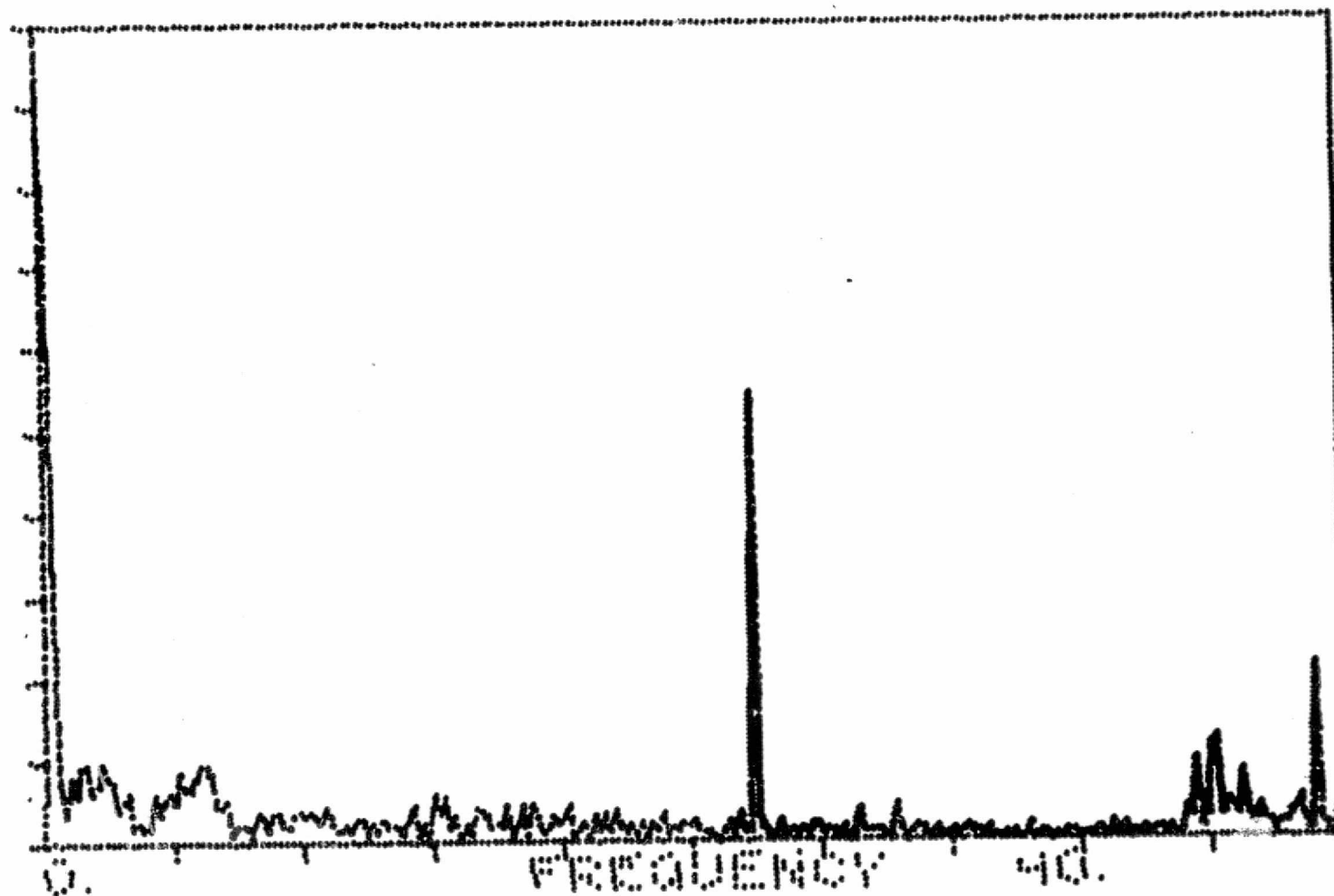
SIZE* 286

DL13/FL1

1.

MAGN

0.



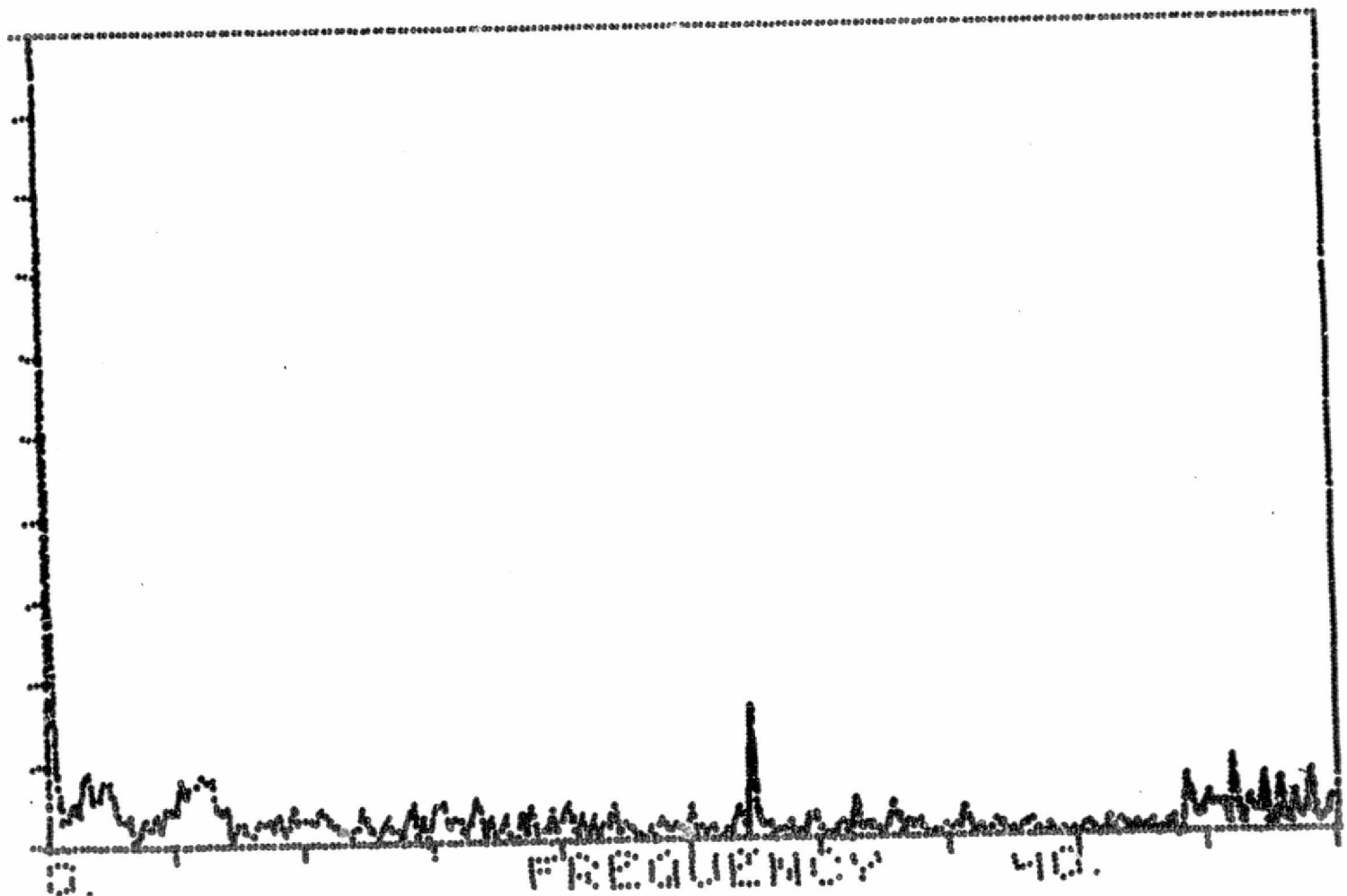
COMPLEX

SIZE= 256

1.

1964

2.



COMPLEX

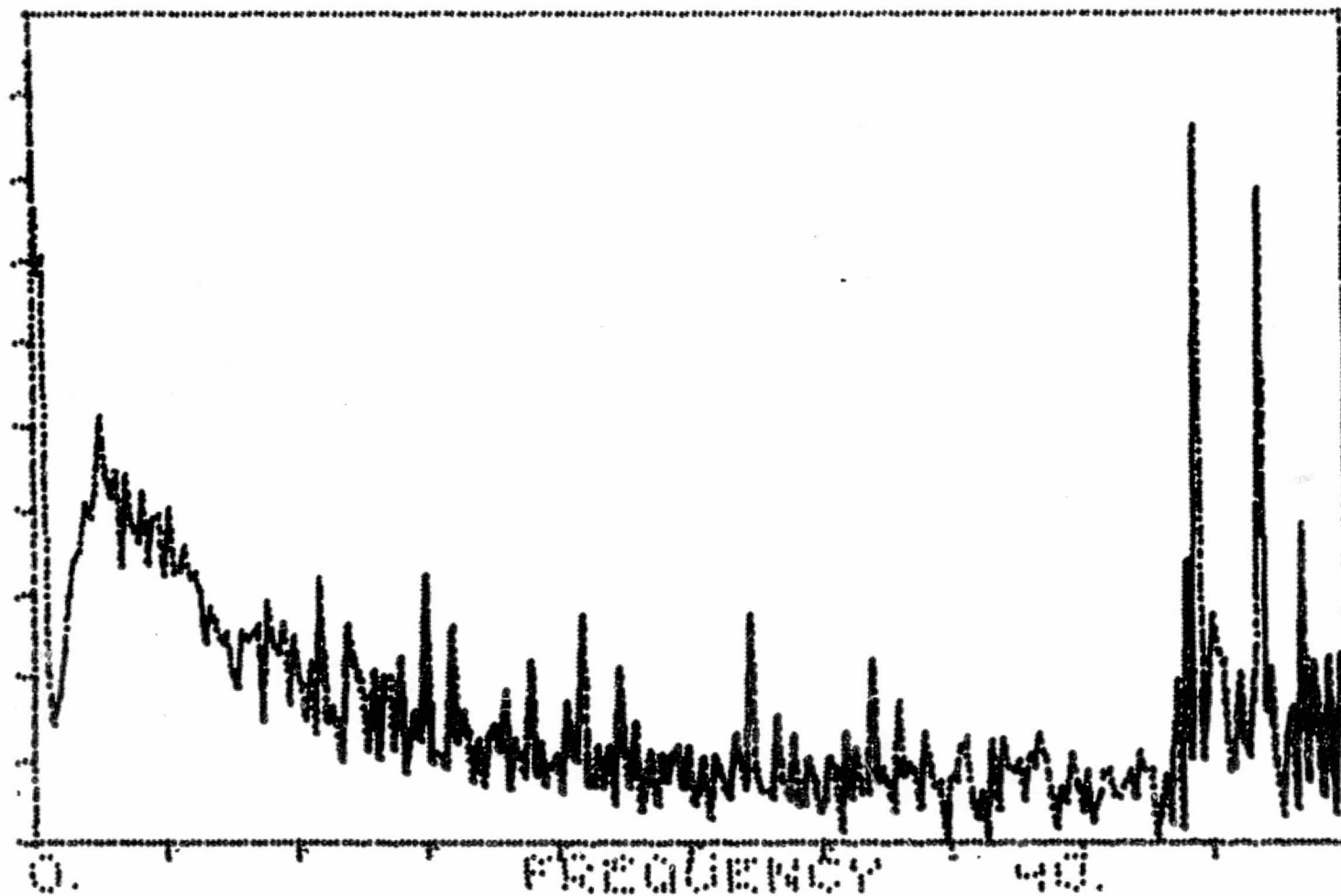
SIZE= 256

DL15/FL1

1.

146W

0.



COMPLEX

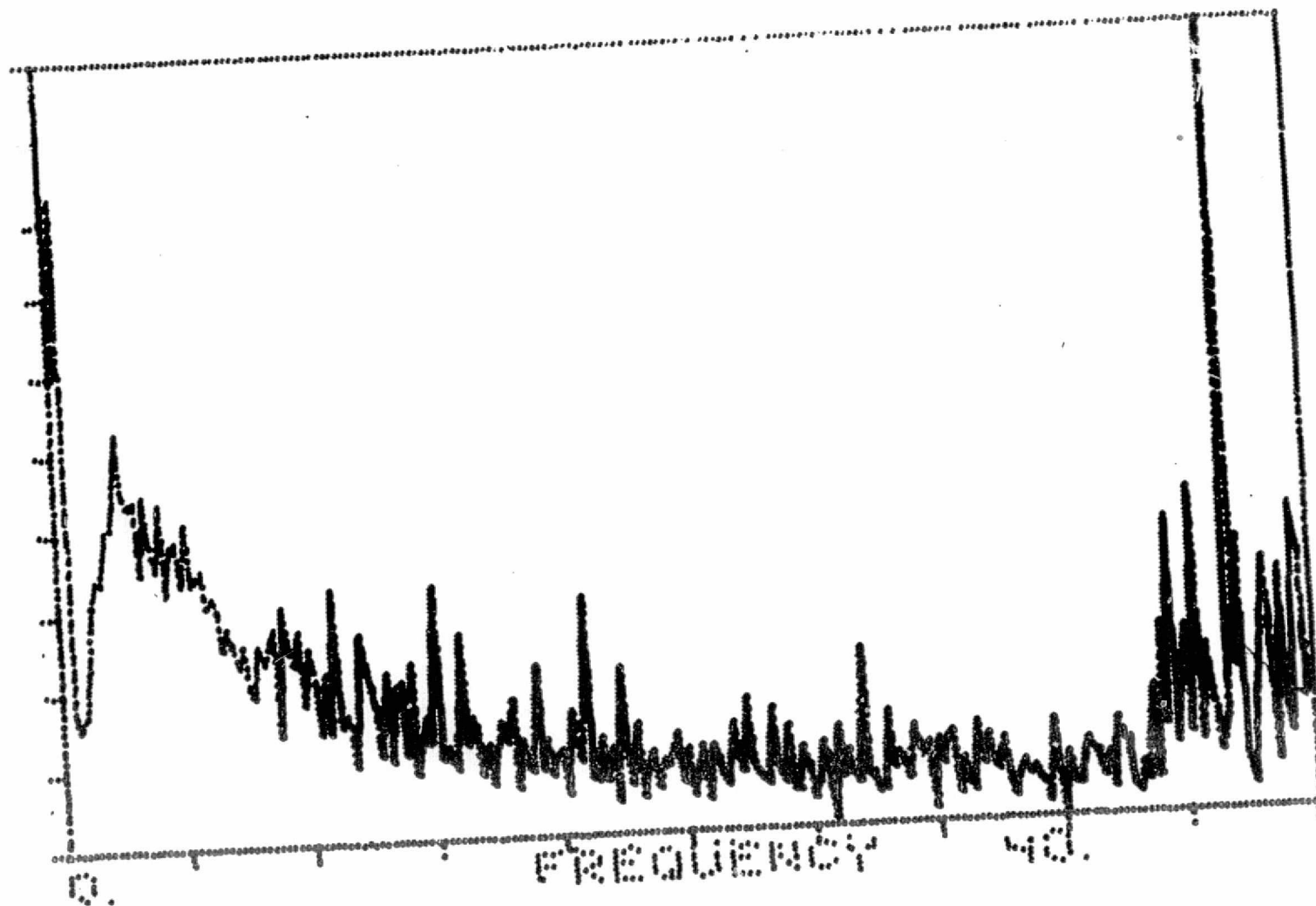
SIZE= 256

DL16/FL1

1.

199M

0.



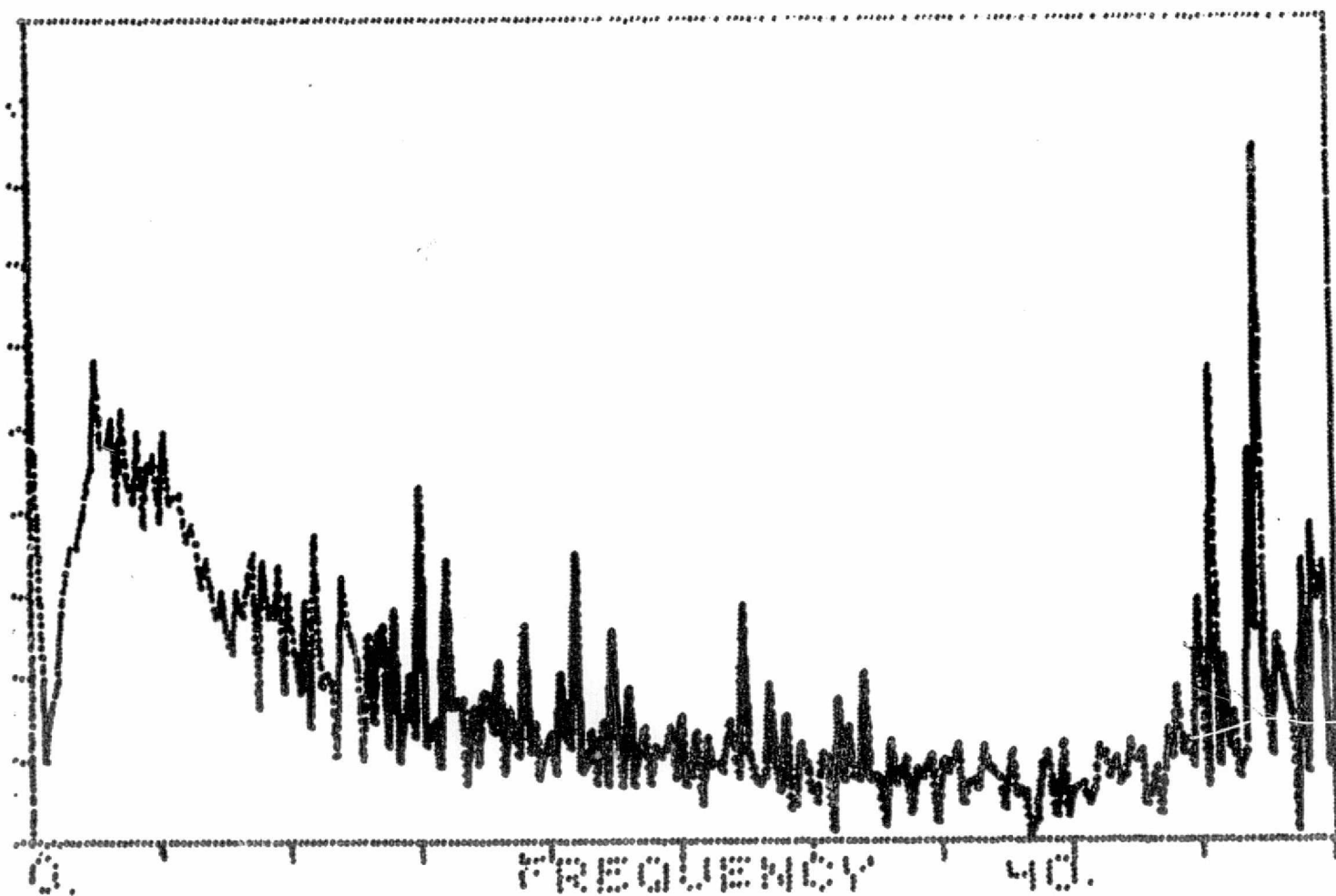
COMPLEX

SIZE= 358

DL16/FL1

11001

0.



COMPLEX

SIZE= 256

DL17/FL1